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Rhodena Wind Project

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Human Health Considerations when Assessing Noise Impacts Related to Wind Turbine Projects¹

Last updated: March 20, 2024

Health Canada (HC) provides the following general considerations for evaluating human health impacts of noise from wind turbine project-related activities. This is not an exhaustive list of human health concerns related to wind turbine projects, and issues will vary based on individual aspects of each project. Further HC guidance on other areas of expertise (i.e., air quality, recreational and drinking water quality, traditional/country foods, and methodological expertise in conducting human health risk assessment and health impact assessment) is available and referenced at the end of this document*.

Please note that HC does not approve or issue licenses, permits, or authorizations in relation to environmental/impact assessment (EA/IA). HC's role in EA/IA is founded in statutory obligations under the *Impact Assessment Act*, and its knowledge and expertise can be called upon by reviewing bodies (e.g., Impact Assessment Agency of Canada, review panels, Indigenous groups and/or other jurisdictions). In the absence of such a request from one of the above noted groups, HC is unable to carry out a comprehensive review of the project. However, whenever feasible, HC is able to accommodate requests for specific human health advice and guidance related to provincial EAs within a reasonable timeframe.

HC advises that an assessment of noise exposure for human receptors located near the project site consider the following:

	Consideration	Reference Document
Receptor Location		
It is important to identify and describe all existing and reasonably foreseeable human receptors (i.e., permanent, seasonal, or temporary) in the area that may be influenced by project-related noise—including a description of how the receptors were identified (e.g., recent land-use maps, verification in person).	<ul style="list-style-type: none"> HC prefers that noise assessments identify and describe any particular receptors that may have a heightened sensitivity to noise exposure (e.g., locations where Indigenous peoples' cultural or religious ceremonies occur, schools, childcare centres, hospitals). 	Appendix G of HC's noise guidance ² provides a list of commonly encountered receptors and related characteristics. Section 6.1 of HC's noise guidance contains additional information regarding identification of human receptors in a project area.
	<ul style="list-style-type: none"> It may also be useful to include map(s) illustrating modelled noise levels from the project at receptor locations in the study area. 	

¹ This document includes general advice on wind turbine noise and health. It should not be interpreted as formal Department guidance.

² Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.930338/publication.html>

Last updated: March 20, 2024

Health Impacts Associated with Noise		
<p>In reviewing an EA/IA, HC focuses on noise exposure levels that have the potential for adverse human health effects. Wind turbine noise can be generated through modulation noise (caused by rotation), low frequency noise (rattle), or transformer noise. There may also be construction-related noise (e.g., heavy machinery). These noises may adversely impact human health predominately through sleep disturbance, decreased speech comprehension, and/or high levels of annoyance. Impacts may vary depending on the project phase (e.g.: impulsive noise events during the construction phase and continuous noise sources during the operational phase), sensitivity of nearby receptors, and duration and frequency of noise exposure.</p>	<ul style="list-style-type: none"> • Sleep disturbance encompasses the following: difficulty falling asleep; awakenings; curtailed sleep duration; alterations of sleep stages or depth; and increased body movements during sleep. The short-term effects of sleep disturbance have been shown to include, but are not limited to: increased fatigue; irritability; and decreased concentration and performance. The guidelines and recommendations of the World Health Organization (WHO)^{3,4} regarding sleep disturbance can be considered in the EA/IA. • The WHO's Guidelines for Community Noise (1999)³ report a threshold for sleep disturbance as being an indoor sound level of no more than 30 A-weighted decibels (dBA) equivalent continuous sound level (LAeq) for continuous noise, during the sleep period. <ul style="list-style-type: none"> ○ The WHO has published night-time noise guidelines that are intended to protect the public, including the most vulnerable groups, from adverse health effects associated with sleep disturbance due to night-time noise. The recommended annual average is 40 dBA night-time sound level (Ln) outdoors (WHO 2009)⁴. 	<p>For more information on noise-induced sleep disturbance, please see Section 5.2 of HC's noise guidance².</p>

³ World Health Organization (WHO). 1999. Guidelines for Community Noise. Berglund, B., Lindvall, T. and Schwela, D.H (Eds.). Available online at: www.who.int/docstore/peh/noise/guidelines2.html

⁴ World Health Organization (WHO). 2009. Night Noise Guidelines for Europe. Hurtley, C. (Ed). Available online at: www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2009/night-noise-guidelines-for-europe

	<ul style="list-style-type: none"> • For individual noise events, the WHO³ has stated: “<i>For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dBA L_{Amax} (maximum A-weighted sound level) more than 10–15 times per night....</i>” <ul style="list-style-type: none"> ○ As people may keep windows partially open at night, HC uses an outdoor-to-indoor transmission loss of 15 dBA for windows at least partially open. Fully closed windows are assumed to reduce outdoor sound levels by approximately 27 dBA. 	
	<ul style="list-style-type: none"> • To sustain adequate speech comprehension, HC holds the view that background noise levels (i.e., noise due to project activities as measured indoors) be maintained below 40 dBA. <ul style="list-style-type: none"> ○ When a school is identified as a potentially impacted receptor, the WHO recommends an ideal background noise level of 35 dBA in the classroom (WHO 1999)³. 	<p>Please see Section 5.3 of HC’s noise guidance² for more information on interference with speech comprehension.</p>
	<ul style="list-style-type: none"> • In quiet rural areas, HC suggests that during construction, the short-term average day-night sound level (L_{dn}) be below 47 adjusted dBA at residences, as this is expected to be the threshold for widespread complaints for construction noise, and mitigation measures be considered if predicted noise levels are above this threshold. 	<p>Section 6.3.1 of HC’s noise guidance² provides advice related to short-term construction noise (< 1 year).</p>
	<ul style="list-style-type: none"> • Community annoyance due to noise, measured as the Percent Highly Annoyed (%HA), can be thought of as an aggregate indicator of assorted noise effects that are creating a negative effect on the community. HC uses the change in %HA as an appropriate indicator of noise-induced human health effects from exposure to long-term construction noise and project operational noise. 	<p>Sections 6.3.1 and 6.3.2 of HC’s noise guidance² provides advice related to long-term construction noise (≥ 1 year)</p>

	<ul style="list-style-type: none"> ○ To assess the impacts of noise from projects using this indicator, the project-related change in the sound environment and the related increase in %HA are evaluated. ○ Noise mitigation measures should be considered when a change in the calculated %HA at any given receptor location exceeds 6.5%. 	Appendix F in HC’s noise guidance ² presents the %HA equations as well as the methodology for obtaining variables used in the equations.
Low Frequency Noise (LFN) and Infrasound		
<p>Low frequency noise (LFN) (typically 20-100 Hertz (Hz); whereas infrasound is typically defined as being below 20 Hz) may result from wind turbines, particularly from larger turbines (>2.3 Megawatts (MW)(Moller, H and C.S. Pederson, 2010)⁵). LFN is an important component of the total noise levels experienced by receptors near large wind turbines.</p>	<ul style="list-style-type: none"> ● LFN is not generally well perceived by the human ear; however, it may induce vibrations in lightweight structures in residences or sleeping quarters that may be perceptible or cause a “rattle.” Research indicates that annoyance related to noise is greater when LFN is present (ISO 1996-1:2003)⁶ and one of the main reasons is the annoyance caused by rattles. <ul style="list-style-type: none"> ○ The indoor environment can also be evaluated in the assessment; however, this should be addressed on a case-by-case basis given the uncertainty associated with specific resonances indoors that may affect the audibility of tones indoors. Due to the potential for masking by certain octave bands indoors, it is possible that certain tones may be audible indoors but not outdoors and vice versa. 	Please see Appendix C.2 of HC ² for more information on LFN.

⁵ Moller, H. and C. S. Pederson. 2010. Low-frequency noise from large wind turbines. J. Acoust. Soc. Am. 129(6), June 2011. Available at : <https://pubs.aip.org/asa/jasa/article/139/3/1431/910721/Wind-turbine-sound-power-measurements>

⁶ International Organization for Standardization (ISO). 2003. ISO 1996-1:2003 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures. www.iso.org/iso/catalogue_detail?csnumber=28633

Last updated: March 20, 2024

	<ul style="list-style-type: none"> • As sound environments are usually characterized using A-weighted decibel levels (dBA) that reflect the frequencies most audible to the human ear, the impacts of low-frequency noise may need to be assessed separately. <ul style="list-style-type: none"> ○ To prevent rattles from low-frequency noise and the associated annoyance from this effect, American National Standards Institute ANSI indicates that the (energy) sum of the sound levels in the 16-, 31.5- and 63-Hz octave bands be less than 70 Z-weighted decibels (dBZ). If this 70-dBZ “rattle criterion” is exceeded, HC suggests the implementation of feasible mitigation measures. ○ Additionally, ANSI 2005⁷ provides a more sophisticated mathematical procedure for assessing %HA when low-frequency noise is present. HC prefers using this procedure when the C-weighted Ldn exceeds the A-weighted Ldn by more than 10 dB. ○ Broner (2011)⁸ has provided simplified outdoor dBC LFN criteria based on the type of receptor (i.e., residential and commercial) and time of day. Based on these criteria, LFN does not generally require further consideration if outdoor Ld is \leq 60 dBC, and $L_n \leq 55$ dBC. At 10 Hz, 60 dBC is approximately 69 dBZ. 	<p>The ANSI standard on environmental sound regarding noise assessment and the related prediction of long-term community response (2005)⁷ provides guidance for low-frequency sound (or infrasound) in the 16-63 Hz octave bands.</p> <p>Appendix D of ANSI 2005⁷ further outlines the procedure for assessing %HA when low-frequency noise is present.</p>
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⁷ American National Standards Institute (ANSI). 2005. Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response (ANSI S12.9-2005/Part 4). Standards Secretariat Acoustical Society of America.

⁸ Broner, N. 2011. A Simple Outdoor Criterion for Assessment of Low Frequency Noise Emission. Acoustics Australia: 39:1–7. Available at: https://www.acoustics.asn.au/journal/2011/2011_39_1_Broner.pdf

Noise Modelling, Mitigation and Monitoring		
<p>Assessing potential impacts to human health from project-related noise, including calculating %HA, may require measuring baseline noise levels, modelling predicted project-related noise levels, and monitoring noise levels during project’s construction and operational phases to verify model predictions.</p>	<ul style="list-style-type: none"> • When baseline measurement is conducted, HC prefers that the measurement be completed in accordance with the International Organization for Standardization (ISO) 1996-2:2007⁹ at each representative receptor (existing and reasonably foreseeable), and that the reports include the dates and hours used to characterize these measurements. <ul style="list-style-type: none"> ○ HC recommends adjustments to baseline noise levels in certain settings, for example, baseline levels in quiet rural areas are adjusted by adding 10 decibels (dB). This 10 dB adjustment also applies to the predicted project noise levels in determining %HA, resulting in a greater change in %HA than would occur with unadjusted noise levels. ○ In addition, HC recommends that non-anthropogenic sounds (e.g. ocean, wind, and animal noises) be removed from baseline measurements. Not removing them may result in an overestimation of baseline sound pressure levels and impact baseline and future changes in %HA calculations. ○ HC recommends use of an appropriate windscreen must always be used and sound is not to be measured in the presence of precipitation or when wind speeds exceed 14 km/hr (3.9 m/s) unless these effects can be shown to be negligible (ISO 1996–2:2007)⁹. The specific windscreen required will be dependent on atmospheric conditions including wind speed and air turbulence (Van den Berg, 2006)¹⁰. For wind speeds below 14 km/hr, outdoor measurements always require a minimum 70 mm 	<p>For more information on adjustments, please see Section 6.1 of HC’s noise guidance².</p>
		<p>Please see Section 6.2.1 of HC’s noise guidance² for more information on removing non-anthropogenic sounds.</p>

⁹ International Organization for Standardization (ISO). 2007. ISO 1996-2:2007 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels. www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=41860

¹⁰ Van den Berg, G. P. 2006. Wind-induced noise in a screened microphone. J. Acoust. Soc. Am; 119:824-833. <https://doi.org/10.1121/1.2146085>

	<p>diameter windscreen. For other conditions, including evaluating low frequency sounds (e.g., C-weighted decibels or dBC), larger windscreens may be required.</p>	
	<ul style="list-style-type: none"> • It is important that the predicted operational noise levels for both daytime (Ld) and night-time (Ln) at all representative receptor locations should be reported in the EA/IA. To permit a proper comparison of noise levels, the units, averaging times and other measurement parameters (including the uncertainty associated with any of the measurements) should be the same as those used in establishing the baseline. <ul style="list-style-type: none"> ○ The assessment should clearly identify the model(s) used and justify their suitability. Specific models may be selected on a site-by-site basis and different modelling software may be appropriate depending on the size of the turbine(s). HC prefers that any assumptions used are conservative (i.e., reasonable worst-case scenarios, including for wind speed and ground attenuation) and be adequately described in the assessment. ○ It is recommended that the EA/IA indicate whether or not there will be a transformer located adjacent to each wind turbine. If individual transformers are present, it is recommended that this additional noise source be included in any operational noise modeling. 	<p>Please see Section 6.3.2 of HC’s noise guidance² for more information on modelling project operational noise.</p>
	<ul style="list-style-type: none"> • While modelling software can be useful in predicting wind turbine noise at nearby receptors, actual noise levels may differ from predicted levels due to uncertainties in model predictions. <ul style="list-style-type: none"> ○ If there are uncertainties in the noise modelling, consider monitoring noise levels, particularly in the event of public complaints. 	<p>Section 6.4 of HC’s noise guidance² provides additional information on noise management and noise monitoring plans.</p>

	<ul style="list-style-type: none"> • If Ldn levels from table 6.2 in HC Noise guidance for short-term construction noise cannot be obtained or if 6.5 % of HA is attained for long-term construction and operational noise with the use of quieter technology during construction, HC suggests that community consultation be undertaken to determine work schedules and to inform the public of the times and duration of noisy activities (including blasting if applicable). In general, HC suggests that impulsive sources (e.g., hammering, pile driving) be avoided at night and in the early morning. • If noise levels are predicted or measured to exceed acceptable levels at the exterior of any nearby receptor location (during construction or operation), the implementation of additional mitigation should be considered. 	<p>Sections 6.4.1 and 6.4.2 of HC’s noise guidance² provide advice on appropriate mitigation noise levels.</p> <p>Please see Appendix H of HC² for suggested construction noise mitigation measures.</p> <hr/> <p>Section 6.4 of HC’s noise guidance² provides additional information about mitigation.</p>
<p>Developing a community consultation plan may be helpful for wind turbine projects. Community reaction to noise impacts following community consultation is more likely to be understanding and accepting of noise, and more likely to make appropriate adjustments to limit noise exposure.</p> <p>Meaningful community consultation and engagement throughout the lifespan of the project can be an effective way to identify and mitigate project-related noise concerns.</p>	<ul style="list-style-type: none"> • It is recommended that the EA/IA should specify whether community consultation with respect to noise has occurred, and whether any human health concerns have been expressed by potentially impacted receptors. • Consider implementing a formalized complaint-response protocol (i.e., a formalized means of receiving and responding to complaints in a timely fashion) with additional monitoring and mitigation measures defined, particularly in the event of public complaints. <ul style="list-style-type: none"> ○ Noise management and noise monitoring plans, including complaint resolution plans, are often incorporated as part of the EA/IA’s Environmental Management Plan. 	<p>Section 6.4.1 of HC’s noise guidance² provides additional information on community consultation as it relates to noise.</p>

For more information on HC's guidelines relating to project noise and the use of these guidelines, please see:

Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: NOISE. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.930338/publication.html>

- Appendix B of this guidance document provides a checklist that may be beneficial in verifying that the main components of a noise impact assessment are completed.

Please also refer to HC's other guidance documents for evaluating human health impacts in environmental/impact assessments:

Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Air. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.902734/publication.html>

Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Water Quality. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.902736/publication.html>

Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Country Foods. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.930343/publication.html>

Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Human Health Risk Assessment. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. <https://publications.gc.ca/site/eng/9.930345/publication.html>

*For consideration of other human health impacts (i.e., other than noise; including atmospheric impacts during construction, run-off to recreational water, etc.) related to EA/IA, please find the attached document entitled *Human Health Considerations in IA*. Additionally, please contact HC if you are interested in the draft *Interim Guidance on Health Impact Assessment of Designated Projects Under the Impact Assessment Act*, which focuses on a determinants of health approach.

Human Health Considerations in Impact Assessment

Health Canada (HC) provides the following generic considerations for evaluating human health impacts in environmental/impact assessment (EA/IA). Please note that this is not an exhaustive list of human health concerns that may result from projects, and that issues will vary based on project specifics. Please also note that HC does not approve or issue licenses, permits, or authorizations in relation to the IA. HC's role in Impact Assessment is founded in statutory obligations under the Canadian Impact Assessment Act, and its knowledge and expertise can be called upon by reviewing bodies (e.g., Impact Assessment Agency of Canada, review panels, Indigenous groups and/or other jurisdictions). In the absence of such a request from one of the above noted groups, HC is unable to carry out a comprehensive review of the project. However, HC is able to accommodate specific requests for human health advice and guidance related to provincial environmental assessments within a reasonable timeframe.

HC currently possesses expertise in the following areas related to human health: air quality, recreational and drinking water quality, traditional foods (country foods), noise, and methodological expertise in conducting human health risk assessment. Based on Health Canada's "Guidance for Evaluating Human Health Impacts in Environmental Assessment", please consider the following information on these topics to assist in your review.

	Consideration	Reference Document
Receptor Location(s) Please ensure the registration document clearly identifies the locations of all receptors that may be impacted by the proposed project, including any receptors located along the transportation route, if applicable.	<ul style="list-style-type: none"> It is important to clearly describe the location and distance from the proposed site(s) to all potential human receptors (permanent, seasonal or temporary), taking into consideration the different types of land uses (e.g. residential, recreational, industrial, etc.), and identifying all vulnerable populations (e.g. in schools, hospitals, retirement or assisted living communities). Note that the types of residents and visitors in a particular area will depend on land use, and may include members of the general public and/or members of specific population subgroups (Indigenous peoples, campers, hunters, etc.) If there is the potential that project-related activities could affect human receptors, impacts to human health should be considered. 	<i>Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Human Health Risk Assessment. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.</i> https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-6-2023-eng.pdf

Atmospheric Environment		
<p>Project impacts to the atmospheric environment include changes to air quality and noise, and can occur in both the construction, operation and decommissioning phases of the project. Project impacts to air quality are commonly caused by emissions from equipment or vehicles as well as by dust. Noise impacts are commonly caused by equipment as well as by activities such as blasting.</p>	<ul style="list-style-type: none"> • If there are receptors that could be affected by project-related activities, impacts to the atmospheric environment should be considered. Changes to the atmospheric environment that may impact human health include: <ul style="list-style-type: none"> ○ impacts to air quality (dust or fumes including PM_{2.5}, NO_x, SO_x, PAHs) ○ increased noise from construction or operations 	<p><i>Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario</i> https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-3-2023-eng.pdf</p>
	<ul style="list-style-type: none"> • If there are receptors who could be impacted by project-related noise, it may be necessary to inform receptors prior to loud activities, such as blasting. 	<p><i>Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Air Quality. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.</i> https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-1-2023-eng.pdf</p>
	<ul style="list-style-type: none"> • If there is the potential for impacts to human receptors from noise and/or air quality changes from the project, the proponent should consider establishing mitigation measures. If complaints are received additional mitigation measures may be required. 	
Recreational and Drinking Water Quality		
<p>The proponent should consider whether any nearby waterbodies are used for recreational (i.e. swimming, boating, or fishing) or drinking water purposes, as well as whether there are any drinking water wells in the area potentially impacted by the project. Nearby drinking and/or recreational water quality may be impacted by</p>	<ul style="list-style-type: none"> • If there is the potential for impacts to drinking and/or recreational water quality from the project site, the proponent should consider establishing mitigation measures. If complaints are received additional mitigation measures may be required. 	<p><i>Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Drinking and Recreational Water Quality. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.</i> https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-2-2023-eng.pdf</p>

<p>accidents or malfunctions, such as a fuel spill; by dust and increased sediment runoff; and by other chemical discharges to the environment. Additionally, wells in the area potentially impacted by the project may be impacted by activities such as blasting.</p>	<ul style="list-style-type: none"> • The proponent should consider preparing a response plan in the event of an accident or malfunction with the potential to impact drinking and/or recreational water quality. Response plans should include a spill response kit, adequate spill response training, and a communication plan to notify all recreational and drinking water users in the impacted area as well as all relevant authorities. 	
	<ul style="list-style-type: none"> • In some cases, for projects that are likely to have an impact on drinking and/or recreational water quality, the proponent should consider conducting water monitoring prior to the start of the project (to establish a baseline). Monitoring would continue throughout the construction, operation and decommissioning phases of the project (as applicable) to monitor for any changes in water quality or quantity. 	
Country Foods		
<p>If there are plants or animals present in the area potentially impacted by the project that are consumed by humans, there may be potential for impacts to country foods. The proponent should consider all country foods that are hunted, harvested or fished from the area potentially impacted by the project. Impacts to country foods may occur from the release of contaminants into soil or water (including from an accident or spill) or from deposition of air borne contaminants.</p>	<ul style="list-style-type: none"> • If there is the potential for impacts to country foods from the proposed project, the proponent should consider establishing mitigation measures. If complaints are received additional mitigation measures may be required. 	<p><i>Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Country Foods. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.</i> https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-5-2023-eng.pdf</p>
	<ul style="list-style-type: none"> • The proponent should consider preparing a response plan in the event of an accident or malfunction with the potential to impact country foods. Response plans should include a spill response kit, adequate spill response training, and a communication plan to notify all potential consumers of country foods in the impacted area as well as all relevant authorities. 	

For more information on HC's guidelines for evaluating human health impacts in environmental assessments, please see:

*Health Canada. 2023. Guidance for Evaluating Human Health Impacts in Impact Assessment: **Noise**. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario*
https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-3-2023-eng.pdf

Appendix B of this guidance document provides a checklist that may be beneficial in verifying that the main components of a noise environmental assessment are completed.

*Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: **Air Quality**. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*
https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-1-2023-eng.pdf

Appendix A of this guidance document provides a checklist that may be beneficial in verifying that the main components of an air quality environmental assessment are completed.

*Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: **Drinking and Recreational Water Quality**. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*
https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-2-2023-eng.pdf

Appendix A of this guidance document provides a checklist that may be beneficial in verifying that the main components of a water quality environmental assessment are completed.

*Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: **Country Foods**. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*
https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-5-2023-eng.pdf

Appendix A of this guidance document provides a checklist that may be beneficial in verifying that the main components of a country foods environmental assessment are completed.

*Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: **Human Health Risk Assessment**. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.*
https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-6-2023-eng.pdf

Appendix B of this guidance document provides a checklist that may be beneficial in verifying that the main components of a human health risk assessment are completed.



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November 7, 2024

Jeremy W. Higgins
Nova Scotia Environment and Climate Change
Environmental Assessment Officer
Jeremy.Higgins@novascotia.ca

SUBJECT : Rhodena Wind Project

Dear Jeremy W. Higgins:

Thank you for the opportunity to review the registration document for the Rhodena Wind Project (the Project), received on October 31, 2024.

The federal environmental assessment process is set out in the [Impact Assessment Act](#) (IAA). The [Physical Activities Regulations](#) (the Regulations) set out a list of physical activities considered to be “designated projects” under the IAA.

While it is the responsibility of proponents to determine whether their proposed projects include activities described in the *Physical Activities Regulations* of the IAA (the Regulations), based on the information submitted to the Province of Nova Scotia on the proposed project, the Agency is of the opinion that, as proposed, the project would not have been described in the Regulations of the IAA. As such, the proponent would not be expected to submit an Initial Project Description of a Designated Project. If the project changes from what has been described in its provincial registration, the proponent is advised to contact the Agency if, in their view, any proposed project activities may be described in the Regulations.

The proponent is advised that under section 9(1) of the IAA, the Minister may, on request or on the Minister’s own initiative, by order, designate a physical activity that is not prescribed by regulations made under the Regulations if, in the Minister’s opinion, the carrying out of that physical activity may cause adverse effects within federal jurisdiction or direct or incidental adverse effects. Should IAAC receive a request for a project to be designated, IAAC would contact the proponent with further information.

Please note that for physical activities not described in the Regulations, should the Project be carried out in whole or in part on federal lands, section 82 of the IAA would apply if any federal authority is required to exercise a power, duty or function under an Act other than IAA in order for the Project to proceed, or if a federal authority is providing financial assistance for the purpose of enabling the Project to be carried out. In that case, that federal authority must ensure that any Project assessment requirements under the applicable sections of the IAA are satisfied.

We also note that in proceeding with the Project, the proponent may still be required to obtain or seek amendment to other federal regulatory permits, authorizations and/or licences.

The proponent is encouraged to contact IAAC at (902) 426-0564 if it has additional information that may be relevant to IAAC or if it has any questions or concerns related to the above matters.

Gardenio Pimentel da Silva

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Date: November 14, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Tiffany MacAulay, Linear Development, Regulatory Review Biologist, Fish and Fish Habitat Protection Program

Subject: Rhodena Wind Project, Inverness County, Nova Scotia

Scope of review:

Fisheries and Oceans Canada (DFO) is responsible for administering the fish and fish habitat protection provisions of the *Fisheries Act* (FA), the *Species at Risk Act* (SARA), and the *Aquatic Invasive Species Regulations*.

DFO’s review focused on the impacts of the works outlined in the **Rhodena Wind Project** Environmental Assessment Registration Document to potentially result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat, which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*;
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*; and
- The introduction of aquatic species into regions or bodies of water frequented by fish where they are not indigenous, which is prohibited under section 10 of the *Aquatic Invasive Species Regulations*.

Technical Comments:

Risk Assessment: Site Preparation and Construction Schedule	
Identify Gap/Risk	In Section 3.3 of the Environmental Assessment Registration Document (EARD), the site preparation does not indicate the timeline of when preparation work may be conducted before the construction phase is required. Site preparation too far in advance of the works, undertakings, and/or activities (WUAs) may result in harmful impacts to fish and fish habitat.
Can it be addressed in another permit/approval or with a T&C?	The identified gap can be addressed during the NSECC watercourse and/or wetland alteration approval process(es) and DFO regulatory review process. WUAs associated with this project in or near water that may result in potential harmful impacts on fish or fish habitat will require DFO regulatory review to avoid, mitigate or offset those impacts.
Define/provide detail	For WUAs that may result in potential harmful impacts on fish or fish habitat, additional information will be required as part of the DFO

	regulatory review process, including detailed information on the proposed WUAs, a detailed description of the fish and fish habitat found at the location of the proposed WUAs, a detailed description on the likely effects of the proposed WUAs on fish and fish habitat, and a detailed description of the measures and standards that will be implemented to avoid and mitigate potential harmful impacts on fish and fish habitat.
Risk Assessment: Wetland Assessment	
Identify Gap/Risk	Impacts to fish and fish habitat from wetland alterations are not clearly outlined, including both direct and indirect impacts. Table 7.37 in Section 7.3.3.6 of the EARD indicates the delineated area of each wetland and area of potential impact from the Project, but does not indicate which wetlands provide fish habitat (direct or indirect) and the degree of fish habitat to be impacted for each wetland.
Can it be addressed in another permit/approval or with a T&C?	The identified gap can be addressed during the NSECC watercourse and/or wetland alteration approval process(es) and DFO regulatory review process. WUAs associated with this project in or near water that may result in potential harmful impacts on fish or fish habitat will require DFO regulatory review to avoid, mitigate or offset those impacts.
Define/provide detail	For WUAs that may result in potential harmful impacts on fish or fish habitat, additional information will be required as part of the DFO regulatory review process, including detailed information on the proposed WUAs, a detailed description of the fish and fish habitat found at the location of the proposed WUAs, a detailed description on the likely effects of the proposed WUAs on fish and fish habitat, and a detailed description of the measures and standards that will be implemented to avoid and mitigate potential harmful impacts on fish and fish habitat.
Risk Assessment: Fish Habitat Assessment	
Identify Gap/Risk	According to Section 7.3.2.4 of the EARD, in-situ water chemistry data were collected; however, the results are not presented in the EARD and it is unclear whether or how they were used to assess and qualify fish habitat.
Can it be addressed in another permit/approval or with a T&C?	The identified gap can be addressed during the NSECC watercourse alteration approval process and DFO regulatory review process. WUAs associated with this project in or near water that may result in potential harmful impacts on fish or fish habitat will require DFO regulatory review to avoid, mitigate or offset those impacts.
Define/provide	For WUAs that may result in potential harmful impacts on fish or fish habitat, additional information will be required as part of the DFO

detail	regulatory review process, including detailed information on the proposed WUAs, a detailed description of the fish and fish habitat found at the location of the proposed WUAs, a detailed description on the likely effects of the proposed WUAs on fish and fish habitat, and a detailed description of the measures and standards that will be implemented to avoid and mitigate potential harmful impacts on fish and fish habitat.
Risk Assessment: Watercourse Crossing Designs	
Identify Gap/Risk	Specific information related to the anticipated watercourse crossings is not yet determined. In Table 7.20, Section 7.3.1.6, of the EARD, forecasted alterations are described, but the type of new or replacement structure (e.g., non-baffled, embedded, clear span) is not specified. It is also not specified whether or not fish passage is required at the crossing locations.
Can it be addressed in another permit/approval or with a T&C?	The identified gap can be addressed during the NSECC watercourse and/or wetland alteration approval process(es) and DFO regulatory review process. WUAs associated with this project in or near water that may result in potential harmful impacts on fish or fish habitat will require DFO regulatory review to avoid, mitigate or offset those impacts.
Define/provide detail	For WUAs that may result in potential harmful impacts on fish or fish habitat, additional information will be required as part of the DFO regulatory review process, including detailed information on the proposed WUAs, a detailed description of the fish and fish habitat found at the location of the proposed WUAs, a detailed description on the likely effects of the proposed WUAs on fish and fish habitat, and a detailed description of the measures and standards that will be implemented to avoid and mitigate potential harmful impacts on fish and fish habitat.

Summary of Recommendations: (provide in non-technical language)

DFO recommends the proponent:

- Submit detailed information on the proposed watercourse crossing designs and wetland alterations, detailed descriptions of the fish and fish habitat found at the location of the proposed WUAs, detailed descriptions on the likely effects of the proposed WUAs on fish and fish habitat (including local and cumulative impacts, potential impacts on species at risk, and direct and indirect impacts on fish habitat), and detailed descriptions of the measures and standards that will be implemented to avoid and mitigate potential harmful impacts on fish and fish habitat.

- Consider open bottom structures, such as clear span bridges and open bottom arch culverts for fish bearing watercourse crossings rather than closed bottom structures, where possible; and
- Refer to DFO's website, <https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>, for further information on DFO's regulatory review process and for further measures to protect fish and fish habitat.

This information can be provided through the NSECC watercourse and/or wetland alteration approval process(es) and/or through submission of a DFO Request for Review application directly to DFO. DFO will then conduct a regulatory review of the proposed project under the *Fisheries Act*, *Species at Risk Act*, and Aquatic Invasive Species Regulations to determine if an authorization under the *Fisheries Act* and/or a *Species at Risk* permit is required.

Date: November 25, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Janet MacKinnon Executive Director SAS/ Protected Areas and Ecosystems

Subject: **Rhodena Wind Project, in Inverness County**

Scope of review:

This review focuses on the following mandate: Protected Areas

List of Documents Reviewed:

Protected Areas Interactive Map

Details of Technical Review:

Distance to Nearest Protected Areas

Key Considerations: (provide in non-technical language)

- Closest Protected Area is 5 km away
- No Concerns

Date: November 26, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Doreen Mackley, Inspection, Compliance and Enforcement – Acting Regional Director

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: watercourse alteration, erosion & sedimentation control, environmental and emergency management.

List of Documents Reviewed:

Environmental Assessment Registration Document – Rhodena Wind Project

Details of Technical Review:

The Project will consist of up to six 7 mega-watt (MW) turbines, access roads, aboveground collector lines, interconnecting transmission system, a substation, and the associated infrastructure for the aforementioned facilities. **Construction of this infrastructure may require watercourse and/or wetland alteration approvals from NSECC.** The potential requirement for these approvals has been identified in the EA Registration Document.

Proponent will be required to meet the NSECC Guidelines for Environmental Noise Measurement and Assessment.

Erosion and sedimentation controls will be required during the construction phase of the project to protect environmental features.

Key Considerations: (provide in non-technical language)

The ICE division has identified the following key considerations:

- Wetland and watercourse approvals may be required as part of this project
- Dust and noise management plans should be developed
- Erosion and sedimentation control plans should be developed

Date: November 22, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Department of Public Works, Environmental Services – Jason Rae, P.Eng.,
Manager

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: Traffic Engineering and Road Safety_____

List of Documents Reviewed:

Rhodena Wind Project Environmental Assessment

Details of Technical Review:

The Department of Public Works (DPW) has reviewed the Rhodena Wind Project Environmental Assessment. The proponent is planning to construct a wind farm of up to 6 turbines near Rhodena in Inverness County, Cape Breton. DPW provides the following comments regarding this project:

- This project will involve transportation of large turbine equipment, the proponent must have a Special Moves Permit (identified in Table 2.2 Provincial Regulatory Requirements). Reference to a transportation plan for the turbine components is mentioned in the report but is not yet finalized (Section 8.3 Traffic and Transportation). The transportation plan must be finalized prior to shipping turbine components. The proponent must contact the DPW Departmental Contact for Special Moves, Darcey MacBain (Darcey.MacBain@novascotia.ca) to begin the process.
- The proponent has indicated that they will be building new access roads and changing current access point alignments, some of which are off provincially owned roads (General Line Road and Rhodena Road for example). To complete this work, the proponent must have a Working Within Highway Right of Way Permit (identified in Table 2.2 Provincial Regulatory Requirements and Section 8.3 Traffic and Transportation). To obtain this permit, the proponent must contact the Local Area Manager.
- All temporary workplaces created on provincially owned roads, whether for new accesses or as the project moves toward implementation must comply with the appropriate section of the nova Scotia Temporary Workplace Traffic Control Manual (NSTWTCM). All traffic control plans must be supplied by the proponent and be reviewed and accepted by the Local Area Manager.

- The EA registration document references establishing speed limits (page 182 and page 241) and incorporating lighting plans for construction activities in the Study Area (page 241). This work appears to relate to construction vehicles and vehicle-avifauna collisions, although it does not specifically reference where these will be implemented (i.e. are the roads within the project site or are they provincially owned). If changes are expected to be made on provincially owned roads, the Local Area Manager must review and approve the changes. This also applies to any changes to the highways references in the EA registration document (removal of signage and guardrails, upgrading of roads, etc. as reference on page 255). All temporary workplaces created due to these activities must comply with the NSTWTCM.
- Mitigation measures are referenced on page 255 and page 297 of the EA registration document. DPW confirms that these measures are adequate and must be followed as outlined in the document. Mitigation measures outlined in Section 13.5 Transportation Related Incidents (page 305) must also be followed.
- The proponent has identified appropriate stakeholders in Table 3.3 (page 10) Summary of Minimum Setbacks and Separation Distances. The section on “Public Roads” identifies Health Canada but does not include the Nova Scotia Department of Public Works as a stakeholder.
- The proponent has identified a possible requirement for blasting (page 95). Plans for blasting near provincially owned roads must be discussed with the Local Area Manager to ensure that appropriate mitigation measures can be implemented (including possible road closures).
- Although the EA registration document references 6 turbines, various appendices mention other numbers (15,18). The turbine quantities should be consistent throughout the document.

Key Considerations: (provide in non-technical language)

1. The proponent must apply for a Special Moves Permit with DPW for transportation of all turbine parts.
2. The proponent must obtain a Working within Highway Right of Way Permit when making changes to access roads in proximity to provincially owned roads.
3. The proponent must comply with the Nova Scotia Temporary Workplace Traffic Control Manual regarding all work to be completed within provincially owned roads.
4. The proponent must follow the mitigation measures outlined in the EA registration document.
5. The proponent must list NSDPW as a stakeholder in Table 3.3 under “Public Roads.”
6. Any plans for blasting activities within proximity to provincially owned roads must be discussed with the Local Area Manager.
7. Turbine quantities should remain consistent throughout the document.

Date: November 27, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Air Quality Unit

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: Air Quality

List of Documents Reviewed:

- *Rhodena Wind Project Environmental Assessment to Appendix A (Part A)*

Details of Technical Review:

ABO Energy Canada Ltd. proposes to construct and operate the Rhodena Wind Project, a 42 megawatt (MW) wind development located near the communities of Creignish and Queensville, within the County of Inverness, Nova Scotia. The Project will consist of up to six wind turbines along with associated infrastructure, including access roads, substation, and interconnection lines. The development of this Project will support Nova Scotia in their target of producing 80% renewable energy by 2030, reducing the Provinces dependency on coal generated electricity.

No baseline monitoring was undertaken, instead the baseline review relied on data from the National Air Pollution Surveillance (NAPS) monitoring station in Port Hawkesbury, approximately 12 km southeast of the Project. Average pollutant concentration data (1-hr, 24-hr, and annual) reported for Port Hawkesbury station were presented in the EARD, and only the 1-hr O₃ exceeded the Nova Scotia Ambient Air Quality Standards.

Project activities will primarily interact with the atmospheric environment through fugitive dust and exhaust emissions (construction phase only). The fugitive dust and exhaust emissions are considered intermittent and short-term. Since the nearest receptor is 1.2 km from the Project and the Project area is forested, it is anticipated that fugitive dust or exhaust emissions will be highly localized and will not impact receptors.

The EARD provides a list of proposed mitigations that could be used on-site. These mitigations are appropriate and would reduce impacts if they are employed.

Key Considerations: (provide in non-technical language)

- It is unclear how effective dust management will be in the absence of a dust management plan with a clear chain of responsibility for actions, including timely complaint resolution.

Date: November 27, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Air Quality Unit

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: _____ Noise _____

List of Documents Reviewed:

- *Rhodena Wind Project Environmental Assessment to Appendix A (Part A)*
- *Appendix L*

Details of Technical Review:

ABO Energy Canada Ltd. proposes to construct and operate the Rhodena Wind Project, a 42 megawatt (MW) wind development located near the communities of Creignish and Queensville, within the County of Inverness, Nova Scotia. The Project will consist of up to six wind turbines along with associated infrastructure, including access roads, substation, and interconnection lines. The development of this Project will support Nova Scotia in their target of producing 80% renewable energy by 2030, reducing the Provinces dependency on coal generated electricity.

Noise impacts were assessed by Strum Consulting. Receptors included all structures identified in GIS data from the Nova Scotia Geomatics Centre, as well as any additional identifiable structures based on aerial imagery. One receptor was identified within 2 km of the Project area, located approximately 1.2 km east of nearest proposed turbine.

Construction noise was identified as having a potential impact on the nearby receptor. Table 10.8 in the EARD shows potential sound levels produced by equipment during the construction phase and the attenuated noise at increasing distances from the source. The median noise presented in Table 10.8 exceeds the 53 dBA daytime permissible sound level (PSL) for a rural environment set out in the Department's *Guideline for Environmental Noise Measurement and Assessment* (GENMA). The noise levels presented in Table 10.8 are for single pieces of equipment only, simultaneous use of multiple pieces of equipment was not included.

The applicant suggested mitigations to minimise these effects, including maintaining equipment in good working order, limiting vehicle idling, and limiting construction activities to between 7am to 10pm. If construction were to continue beyond 7pm, the proponent

would be expected to meet the 48 dBA evening PSL for a rural environment set out in GENMA.

Operational noise levels were assessed using a suitable noise model. The assessment included a baseline noise level of 35.1 dBA and a ground attenuation factor of 0.5. These are reasonable inputs. The modelled results show that the predicted noise impact at the receptor is 39.4 dBA, just below the 40 dBA provincial noise limit for wind projects. Predicted impacts at the receptor could exceed 40 dBA if the baseline noise level is higher than 35.1 dBA.

Key Considerations: (provide in non-technical language)

- If approved, the project has the potential to impact receptors during the construction phase and the operation phase.
- If the baseline noise level exceeds 35.1 dBA, it is possible noise levels could exceed the 40 dBA noise limit at receptor locations once the windfarm is operational.

Date: December 11, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Department of Natural Resources and Renewables

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: Clean Energy, forest research, geoscience health and safety, mineral exploration, mineral development, abandoned mines openings, authorities and approvals required from the Land Services Branch, biodiversity, species at risk status and recovery, wildlife species and habitat management and conservation including Old Growth Forest.

List of Documents Reviewed:

Land Services Branch:

- Environmental Assessment Registration Document
- Drawings 2.1-2.3H
- GIS shapefiles

Geoscience and Mines Branch:

- Environmental Assessment Registration Document
- GIS Files
- Nova Scotia's Registry of Claims (NovaROC)
- Mineral Occurrence Database
- OFM ME 2017-013: Bedrock Geology Map of the Whycomomagh Area, NTS 11F/14, Inverness County, Nova Scotia [1:50 000]
- OFM ME 2017-009: Bedrock Geology Map of the Port Hawkesbury Area, NTS 11F/11, Antigonish, Guysborough, Inverness and Richmond Counties, Nova Scotia [1:50 000]

Forestry and Wildlife Branch:

Forestry Division:

All shapefiles provided and the main environmental assessment report

Wildlife Division:

- Environmental Assessment Registration Document - Rhodena Wind Project
- Shapefiles showing Study Area and Assessment Area, planned location of project infrastructure, wood turtle survey transects, and SAR observations

Details of Technical Review:

Clean Electricity Branch:

Renewable energy projects such as wind projects will assist the province in implementing the Clean Power Plan and obtaining targets outlined in the Electricity Act and the Department's 2021 mandate letter. It will also support Environment and Climate Change's Environmental Goals and Climate Change Reduction Act (EGCCRA), and the Climate Change Plan for Clean Growth (CCPCG):

Electricity Act:

- 80% Renewable Electricity Standard by 2030;

NRR Mandate letter:

- Commit to 80% of Nova Scotia's electricity needs being supplied by renewable energy by 2030;

EGCCRA: 80% of electricity in the Province supplied by renewable energy by 2030;

- 53% emissions reduction targets from 2005 levels by 2030;
- Phase out of coal-fired electricity generation by 2030;
- Net-zero emissions by 2050;

CCPCG:

- 90% emissions reductions from the electricity sector by 2035;
- Green Choice Program to be launched in 2025.
- 500 MW of new local renewable energy by 2026.

Clean Power Plan:

- 1000 MW of new onshore wind energy by 2030.

Land Services Branch:

The Proponent will require authorizations (such as a lease, licence, letter of authority, or easement) from NRR for any activity on Crown lands including:

- erecting, operating, maintaining, and decommissioning wind turbines and related infrastructure;
- temporary use and access of the land, such as requests to temporarily use existing Crown owned roads, install meteorological (MET) towers, or to conduct geotechnical investigations;
- installing and maintaining overhead/underground transmission wires and collector lines, including for submerged Crown lands;
- requests to construct and use new access roads, or to widen or otherwise modify existing Crown roads;

Note: requests to use existing NSPI or Bell owned infrastructure located on Crown lands must be directed to the owner of the utility infrastructure.

Geoscience and Mines Branch:

The EA application addresses karst and uranium occurrence potential and has indicated risks associated to both should be mitigated. The Proponent anticipates conducting geotechnical evaluations to assess the presence of sulphide-bearing minerals and likelihood of ARD, though the host bedrock geology is not recognized as being acid generating. In addition, the proponent has outlined mitigation strategies in case of encountering ARD or karst conditions.

The proponent does not anticipate having to blast bedrock and that greater potential for encountering karst conditions exists on the proposed hauling road, not near turbine infrastructure. The Proponent also addresses Radon and Uranium potential maps with associated drawings. There are no known uranium occurrences in the study area. The Proponent also states "Avoidance of geologic hazards and groundwater users during the Project's design and development was the priority. In addition, the use of existing road networks and use of existing right-of-way's minimized the Project's impact to the overall geologic environment."

Mineral Occurrences

Several limestone and dolomitic marble occurrences are located 1.5 km south-southeast of the Project Area including the Lamey Brook - Creignish Road Dolomite Deposit. In addition, a single metallic mineral occurrence occurs 5 km east of the Project Area (As, Mo), none of which have current exploration licences. The nearest exploration licences are located approximately 6.5 km east of the Project Area.

It is not anticipated that the proposed project will result in any negative impacts to the nearby mineral exploration licences. The proposed project area is considered to be mainly comprised of low-medium level for mineral potential with minor hot spots of high-level potential surrounding known limestone.

Forestry and Wildlife Branch:

Forestry Division:

- This proposed project development does not interfere with any current or planned silvicultural research activities based on its location described in the project shapefiles and in the main document.
- One of our research sites (attached shapefile called REFOR_8903) is within the study area but not the assessment area or footprint of the proposed infrastructure.
- Conflict with this research site is therefore unlikely, but we ask that this site be left undisturbed and if any new conflicts emerge we be contacted (James Steenberg, Senior Research Forester, james.steenberg@novascotia.ca)

Wildlife Division:

Terrestrial Habitats including Old Growth (Section 7.4.1): According to the EARD, 4.75 km of 9.75 km of access roads will be new build. Impacts of new road construction on biodiversity, including habitat fragmentation, should be considered.

Six old-growth stands overlap the Assessment Area. The proponent has stated they will avoid clearing in old-growth forests on crown land and will work with NRR to avoid or minimize impacts to old-growth on private land.

Forest Ecosystem Classification plots were only completed in stands assessed for old growth forest (Figures 7.20 A-E), and not in other terrestrial habitat types. The relative prevalence of the 8 forest groups and 23 vegetation types is also unknown (e.g., the number of plots of each vegetation type or forest group).

Terrestrial Flora including At-Risk Lichens (Section 7.4.2): Blue felt lichen (*Pectenیا plumbea*) was observed during field surveys, including three observations within 100m of the Assessment Area on Crown land: two along an existing access road and one along a proposed transmission line route. Frosted Glass-whiskers (*Sclerophora peronella*) was observed in the Assessment Area on private land. The EARD notes that the project has been designed to avoid direct loss of these occurrences and will mitigate impacts by providing as large a buffer as possible during detailed design, and by conducting road upgrades on the far side of the existing road within lichen buffer areas. Adequate buffers are required to preserve the sensitive microclimates required by lichen.

Terrestrial Fauna excluding Birds and Bats (Section 7.4.3): Canada lynx (*Lynx canadensis*) were selected as a priority species in the EARD. As noted in the province's Endangered Canada Lynx Special Management Practices (https://novascotia.ca/natr/wildlife/habitats/terrestrial/pdf/SMP_Canada_Lynx.pdf), roads and road-like corridors, particularly those that allow for through travel, can allow for incursion of competing predators such as coyotes into areas previously accessible only by lynx in winter months. The proposed undertaking includes 4.75 km of newly constructed road that allow for through travel between existing roads as well as above-ground collector lines extending from the substation to existing transmission lines. Mitigations to reduce the potential impact of new road and corridor construction on lynx are required.

Both wood turtle (*Glyptemys insculpta*) and snapping turtle (*Chelydra serpentina*) were identified as priority herpetofauna species in the assessment. The effects assessment for herpetofauna only discusses impacts to wood turtles and suggests that gravel roadsides will create new habitat that may benefit herpetofauna. Creation of artificial habitat is not considered to be a benefit as it can attract nesting turtles to roadsides, placing them and their hatchlings at elevated risk of death or injury from vehicle collisions.

The EARD states that an American bullfrog (*Lithobates catesbeianus*) was observed in the Study Area during the field assessment. NRR is not aware of any confirmed records of American bullfrog on Cape Breton Island and requests additional details of the observation including the location, time, nature of observation (visual or auditory).

Bats (Section 7.4.4): Overall bat activity at the site was fairly low in 2022 and 2023 (average of 0.14 and 0.18 bat passes per detector night). However, over 70% of the bat calls recorded were migratory species, three of which have been assessed as Endangered by COSEWIC and are particularly vulnerable to effects of wind development.

Use of consistent metrics for reporting on acoustic survey results among years would facilitate comparisons. Using bat passes per detector night per month would account for differences in the number of detectors between years (and loss of detector nights due to

equipment issues). Seasonal migratory bat activity peaked in June-July in 2022 and in September-October in 2023; a discussion of possible explanations for this difference should be provided. Acoustic bat surveys began May 13th in 2022 and May 24th in 2023, missing the first 2-3 weeks of the bat monitoring period (May 1 – Oct 31).

The active bat period during which work is minimized should align with the bat monitoring period (early May to end of October) and peak activity, which is not met by the proposed mitigations of minimizing work in the “*bat active period of April 1 to September 30*”.

Birds (Section 7.4.5): Field survey coverage within the Assessment Area is poor, particularly near Turbine 5 and Turbine 6. Breeding bird surveys should be conducted in the Assessment Area prior to turbine construction with a focus on areas of modeled potential SAR habitat. The report states that winter avifauna surveys were conducted opportunistically on March 1st and March 5th 2023; however, no results are provided. Please provide results of winter bird surveys to NRR. Please also note for Appendix I:

- Tables 1, 4, and 12: Temperature and wind values do not make sense, seemingly due to a cell formatting problem (numbers formatted as dates).
- Survey conditions for the diurnal breeding bird surveys are required.
- Table 9 is missing.
- Please clarify the distinction between incidental observations and area searches.
- Please provide details on incidental observations of SAR birds including date, location, and any breeding evidence noted (Table 13).

The EARD states “*The majority of modelled breeding habitat for Common Nighthawk, a SAR observed within the Study Area, was located to the north and west of all wind turbines, with limited overlap between the Assessment Area and modelled habitat.*” Common Nighthawk will forage kilometres from nesting sites, raising the potential for adverse effects from turbine. Gravel roads and vegetation clearing within the project footprint will also create new potential nesting habitat for the species.

The EARD states that “*During spring and fall migration surveys, no large flocks of migrating birds were recorded, indicating no migration pathways will be disrupted by the Project*”. Presence or absence of migration pathways cannot be inferred by diurnal counts alone. Acoustic monitoring suggests peak migratory activity occurs on discrete days spread throughout the season.

The proponent should consider preventative measures to reduce or eliminate the risk of ground or burrow-nesting species initiating breeding within stockpiles or exposed areas, such as covering or vegetating exposed areas and stockpiles where possible and reducing the grade of stockpiles to no more than a 70% slope to reduce attractiveness to burrow-nesting species.

Cumulative Effects (Section 14.3): Cumulative effects on terrestrial habitat and terrestrial fauna should be assessed; the proposed project includes 4.75 km of new road construction in a landscape already subject to considerable habitat fragmentation and may increase access to wildlife (including lynx and moose) by competitors, predators, and harvesters.

Key Considerations: (provide in non-technical language)

Clean Electricity Branch:

Wind energy projects such as Rhodena Wind will help Nova Scotia transition its electricity system from the use of coal-fired generation that has direct negative environmental impacts, including air pollution and greenhouse gas emissions.

The transition of our electricity system to renewable energy is part of the province's plans and commitments to climate change mitigation.

Wind energy is the lowest cost of energy world-wide and local deployment of wind energy is anticipated to save rate payers of Nova Scotia millions of dollars over the lifetime of their operation while also reducing the emissions and pollution intensity of the electricity system.

Wind energy will help the electricity system avoid output-based price compliance for greenhouse gas emissions in Nova Scotia resulting in less upward pressure on rate payers through fuel.

Transitioning the electricity system to renewable energy is the most cost effective and significant action the province can undertake to reduce its greenhouse gas emissions in the near term.

Replacing coal-fired electricity generators with renewable energy such as onshore wind is the most cost-effective method and reduces the most greenhouse gases in Nova Scotia.

The Rate Base Procurement and Green Choice Program procurement are anticipated to result in more than 2 million tonnes of greenhouse gas emissions reductions from the electricity system by 2028.

Land Services Branch:

No further comments.

Geoscience and Mines Branch:

No further comments.

Forestry and Wildlife Branch:

Forestry Division:

This project does not interfere with on-going silviculture research objectives, though please contact us if a conflict emerges with our research site listed above.

Wildlife Division:

The Department offers the following recommendations:

- Obtain all permits necessary to undertake the project as required under legislation related to wildlife, species at risk, watercourses and wildlife habitat alterations
- Provide digital way points and/or shapefiles for all flora and fauna surveys and incidental observations, including for the observed bullfrog, winter bird surveys, all observations of Species at Risk and Species of Conservation Concern to NRR (those species listed and/or assessed as at risk under the Species at Risk Act, Endangered Species Act, COSEWIC, as well as all S1, S2 and S3 species). Data should adhere to the format prescribed in the NRR Template for Species Submissions for EAs and is to be provided within two months of collection.

- Consult with NRR Wildlife Division on placement of collector line poles in or near wood turtle habitat and at-risk lichen buffer zones.
- Develop a Wildlife Management Plan (WMP) in consultation with NRR and ECCC which includes:
 - Communication protocols with regulatory agencies.
 - Noise, dust, lighting, blasting, and herbicide use mitigations.
 - General wildlife considerations (e.g., human-wildlife conflict avoidance).
 - Education sessions and materials for project personnel regarding important biodiversity features they may encounter on-site (including Species at Risk) and how to appropriately respond to those encounters.
 - Mitigation measures consistent with recovery documents (federal and/or provincial recovery and management plans, COSEWIC status reports) and provincial Special Management Practices for Crown land to avoid and/or protect Species at Risk/Species of Conservation Concern. This includes:
 - .Mitigation measures to reduce the potential impact of new road and corridor construction on Canada lynx.
 - Mitigation measures to minimize the potential use of roadsides as nesting areas by turtles.
 - Mitigations to minimize time between vegetation clearing/ground disturbance and construction to reduce the risk of a potential encounter with ground nesting SAR/SOCI, especially during the breeding season.
 - Mitigations to minimize work during the active bat period that align with the bat monitoring period (early May to end of October) and peak activity.
 - Preventative measures to reduce or eliminate the risk of ground or burrow-nesting species initiating breeding within stockpiles or exposed areas.
 - Measures to minimize disturbance to Blue Felt Lichen and Frosted Glass-whiskers.
 - Measures to protect and mitigate against adverse effects to migratory birds during construction and operation. The incidental take of breeding birds, as well as their nests and/or eggs, is not permitted under the Migratory Birds Convention Act and the NS Wildlife Act. This may include avoidance of certain activities (such as vegetation clearing) during the regional nesting period for most birds, buffer zones around discovered nests, limiting activities during the breeding season around active nests, and other best management practices.
 - Mitigations to proactively protect bats and avifauna against mortality from turbine strikes and barotrauma. This may include implementing turbine deterrents, seasonal or detection-based shutdown systems for turbines, and increased cut-in speeds.
 - Details on monitoring and inspections to assess compliance with the WMP.
- The following surveys would inform appropriate mitigations in the Wildlife Management Plan:
 - Conduct FEC plots in all vegetation types.
 - Breeding bird surveys should be conducted in the Assessment Area prior to turbine construction with a focus on areas of modeled potential SAR habitat, particularly near turbines 5 & 6

- Revegetate cleared areas using native vegetation or seed sources following consultation with NRR.
- Develop a post-construction monitoring plan for at-risk lichens, with particular focus on how lichens are impacted by changes to their surrounding habitats and on comparing lichen occurrences in the Study Area with intact buffers to those whose buffers have been compromised through project activities.
- Develop a plan to prevent the spread of invasive species both on and off site in consultation with NRR. The plan should include monitoring, reporting, and adaptive management components.
- Develop a monitoring program to assess mortality for birds and bats in consultation with NRR and ECCC, implemented for a minimum of two years post-construction during the operation stage of the project. Guidance on monitoring requirements will be provided by NRR. Reporting of the results of the monitoring program shall be on an annual basis to the appropriate regulatory agencies. Pending review of results of the monitoring program, additional monitoring or mitigation measures may be required
- Engage with NRR and ECCC to develop an adaptive management plan to inform decision-making related to adverse effects of the project on migratory bird and bat species. Additional surveys or mitigations may be required following a review of the effectiveness of the plan.
- Describe the impacts of the project on landscape-level connectivity for wildlife and habitat (e.g., habitat fragmentation, loss of intact forested habitat, increased road density). Include an assessment of the cumulative effects of the project on landscape level connectivity and habitat loss, and the measures proposed to mitigate those effects, in particular for Canada Lynx.

Date: November 27, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Climate Change Division – Lori Skaine

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate: Climate Change Adaptation and Mitigation

List of Documents Reviewed:

- Rhodena Wind Project EA Registration Document

Details of Technical Review:

Adaptation:

- The proponent describes local climate conditions under section 7.1.1.4 of the EA Registration document using available historical observed meteorological data, but did not include precipitation extremes.
- The proponent compared climate baselines with projected future conditions under a higher and lower greenhouse gas emissions scenario to provide a range, which is considered good practice.
- The proponent describes potential climate-related impacts from changes in sea level rise, flooding, temperature, severe weather events, wildfire, and turbine icing. For each of these, the proponent describes risk mitigation measures, if deemed applicable, which span across the lifetime of the project (e.g., siting, operations, etc.).

Mitigation:

- **Baseline Information:** The proponent quantifies the GHG baseline emissions for the "no-project" scenario and compares these to the emissions from the "project" scenario, illustrating the project's impact on reducing GHG emissions.
- **Sources of greenhouse gas - GHG Emissions (expressed in tonnes of CO₂e):** The proponent evaluated GHG emissions during two phases of the project: construction and operation. They state that the GHG emissions resulting from the removal of vegetation and overburden for the construction of new roads or the upgrading of existing roads are temporary and short-term. These emissions represent only a small, incremental increase in comparison to the overall emissions of the project, and as such, they were not quantified.

- **Positive Impacts:** The proponent indicated the project reduces GHG emissions by replacing fossil fuel-based electricity, contributing to annual reductions quantified in tonnes of CO₂e (~ 76,292.36 tCO₂e per year).
- **Negative Impacts:** The proponent estimated temporary GHG emissions during construction and transportation phases due to fuel use and equipment operation (13,424.80 tCO₂e), with lower emissions during operations (217.07 tCO₂e).
- **Mitigation Measures:** The proponent included strategies for reducing the project's GHG emissions, such as optimizing construction logistics, applying better construction and waste management practices, and enhancing removal measures like revegetation.

Key Considerations: (provide in non-technical language)

Adaptation:

- The proponent has followed a number of recommended good practices in understanding potential climate risks and identifying risk mitigation options for the project, including appropriate use of climate projection data.
- The proponent may wish to describe historical extreme precipitation events for the proposed project area, in addition to total monthly precipitation.
- The proponent may wish to consider using the risk management framework described in the *Guide to Considering Climate Change in Project Development in Nova Scotia* as a systemic approach to identify relative risk categories (e.g., high, medium, low) to guide design of mitigation measures.

Mitigation:

- No additional recommendations need to be made.

Fisheries and Aquaculture

Date: November 27, 2024

To: Jeremy W. Higgins

From: Lesley O'Brien-Latham, Executive Director, Policy and Strategic Advisory Services

Subject: Rhodena Wind Project - ABO Energy Canada Ltd

Scope of review:

The scope of this review follows the Department of Fisheries and Aquaculture's (DFA) legislated mandate to develop, promote and support fishing, aquaculture, seafood processing and sportfishing in Nova Scotia.

List of Documents Reviewed:

- Notice of Registration of Undertaking
- RHODENA WIND PROJECT Environmental Assessment Registration Document (EARD to Appendix A)
- Part 1 – EARD to Appendix A
- Part 5 – Appendix E – Appendix H
- 24-9952_Rhodena_Drawings7.10-7.14.pdf
- 24-995_Rhodena_Drawings7.15-7.25.pdf

Details of Technical Review:Aquaculture:

There are a total of 0 rockweed leases and 7 aquaculture sites within 25km of the proposed project. Of these, 6 are marine shellfish sites, 1 is marine finfish sites, and 0 are land-based aquaculture facilities.

Sediment is likely to be generated during the road construction and site preparation phases. There may also be minor sediment dispersal during the site's operation. Sediment can affect the ability of marine plants to obtain adequate sunlight for growth, reducing oxygen levels for both fin and shellfish. Settling sediment can obstruct feeding and destroy habitat by covering the surfaces at the bottom of bodies of water, smothering the habitats, and impacting the nutrients available to shellfish bottom cultures. Sediment contamination can also affect the ability of fish gills to absorb dissolved oxygen. Sediment can increase the risk of disease outbreaks among aquatic species. The results can range from reduced growth to morbidity.

The EARD states that a mitigation plan has not yet been developed so, the Aquaculture Division was unable to evaluate the suitability of the mitigation measures for aquaculture activities. While the general sediment mitigation measures in the EARD should help minimize risks to aquaculture sites, if applied appropriately their effectiveness depends on monitoring, which the EARD indicates is not a planned activity.

There is no mention of power supply disruption in the EARD; if a power disruption is required during this project, outages should be planned whenever possible and adequate notice should be given to aquaculture operators who will be impacted by the outage.

The impacts of the project on water are more related to removal of plants and watercourse changes (via activities like culvert installation). There are no plans for water withdrawal or discharge. However, changes in water quality or quantity due to sedimentation, vegetation removal, and water redirection may result from activities during road construction. The proposed mitigations should result in little risk to aquaculture sites from these activities if properly implemented. If plans change, and water withdrawal or discharge become necessary, the applicant needs to update their plan and provide appropriate mitigations for review.

Inland:

The proponent identified risk to fish and fish habitat through construction and maintenance of the project. Main impacts would be through water course alteration and potential sedimentation/erosion issues from road upgrading/building.

These risks will be mitigated through use of a Sediment Plan, fish rescue during construction, and revegetation of disturbed areas. These issues will be addressed further through the NSECC watercourse alteration process.

The provided environmental baseline information consisted of trapping data (minnow traps, eel pots, and fyke nets) and backpack electrofishing. The proponents demonstrate three species within the project area (Brook Trout, Atlantic Salmon, and American Eel).

The methodology used is likely underrepresenting the importance of Brileys Lake (no fish capture) and Pond 1 (one fish captured) as only one sampling event occurred during early August in each of the waterbodies and that sampling event was concentrated at the shoreline (based on drawing 7.14). During that time of year (early-August), the species identified within the project area are unlikely to be captured along the shoreline as thermal conditions likely encountered would preclude those species from occupying these sampled locations (no temperature data were provided). Numerous minnow traps were deployed and several eel pots, but only one fyke net was used. For a more comprehensive understanding of the fish community, more depth strata, sites spread around the lake, and fyke nets should have been sampled. Sampling these waterbodies during the spring or fall would also have been more revealing than during the height of the summer.

The proponents sampled two sites in three brooks using backpack electrofishing. While the EA indicated that electrofishing was qualitative, it also indicated the CPUE (catch per unit effort) was calculated twice, which offers a quantitative indices of relative abundance. The CPUE results were not provided. Notably, the second 100m stretch of each brook had less effort than the first (~552 seconds less, ~502s less, and ~351s less for Rough, Chisholm, and Lamey brooks, respectively), with only one being described as cut short due to temperature constraints/fish welfare.

Adding an additional electrofishing site in each brook plus control location (potentially 3 sites in Rough Brook above/upstream of the project area) would allow mean CPUE/variation calculations and assist with comparing baseline info with subsequent surveys and factoring in environmental variability. This information would provide a more comprehensive understanding of the impacts to the fish community.

Marine:

There are several licensed NS Seafood Buyers/Processors located in Inverness and Guysborough Counties, including:

- NS Buyer, BST Lobster Sales Inc are located approximately 15kms (via land) away in Aulds Cove;
- DSM Nutritional Products are located approximately 20 kms nearby in Mulgrave; and
- Ceilidh Fisherman's Co-op is located approximately 35 kms north in the town of Port Hood, NS.

First Nation's fisheries activity within this location is active on a commercial, cultural, and moderate livelihood perspective.

From a commercial harvesting perspective, there are several fish species harvested adjacent to this project in the Gulf of St. Lawrence, such as: lobster, crab, herring, mackerel, groundfish, squid, billfish, scallop, tuna, and silversides. Fishing in these areas occurs from early-Spring to late-Fall.

Key Considerations: (provide in non-technical language)

Aquaculture:

- Risks to aquaculture sites from sediments need to be monitored and mitigated appropriately.
- If power disruptions, water withdrawal, or water discharge are going to occur, the applicant needs to update their plan and provide appropriate mitigations for review.

Inland:

- Data provided on fish community within lakes sampled is likely not representative of actual conditions given methodology/effort used and time of year sampled
- Electrofishing data are not adequate to infer comparisons over time
- Despite the noted sampling issues, the overall project activities are not anticipated to negatively impact NS Sportfishing opportunities/fish populations if NSECC watercourse alteration processes and identified erosion and sedimentation mitigations are implemented and adhered to.

Marine:

- As this proposal is a land-based project that is subject to environmental guidelines, adherence to these policies and guidelines should result in having no anticipated risks to marine activities and DFA's interests.

Project proponent should be made aware of:

- the [Fisheries and Coastal Resources Act](#),
- Provincial [Aquaculture License and Lease Regulations](#),
- Provincial [Aquaculture Management Regulations](#), and
- the [Nova Scotia Rock Weed Harvesting Regulations](#).
- the Department's [Site Mapping Tool](#) for more information on the location of aquaculture sites and leases in the area of their proposed project.



TC response / specialist info: EA Registration - Rhodena Wind Project - ABO Energy Canada Ltd - comments due November 27, 2024

From Flanagan, Jason (TC/TC) <jason.flanagan@tc.gc.ca>
Date Wed 2024-11-27 15:01
To Higgins, Jeremy W <Jeremy.Higgins@novascotia.ca>

 1 attachment (109 KB)

TC response to NS ECC - Rhodena Wind Project, Cape Breton.docx;

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UNCLASSIFIED / NON CLASSIFIÉ

Hi Jeremy,

Please see Transport Canada (TC)'s response and specialist information related to this project. TC Environmental Affairs does not need to be part of this provincial environmental review and the Proponent can work directly with the subject matter experts identified in our response.

If you have any questions, feel free to reach out.

J. Jason Flanagan, M.Sc.

Senior Environmental Advisor
Environmental Programs and Indigenous Relations
Transport Canada, Atlantic Region
jason.flanagan@tc.gc.ca | Tel. : 506.227.8257 | TTY: 1.888.675.6863

Conseiller principal en environnement
Programmes environnementaux et Relations Autochtones
Transports Canada, Région de l'Atlantique
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From: Higgins, Jeremy W <Jeremy.Higgins@novascotia.ca>
Sent: Thursday, October 31, 2024 9:24 AM
To: Birch-Caza, Melissa J <Melissa.Birch-Caza@novascotia.ca>; Alward, Emily <Emily.Alward@novascotia.ca>; Mitchell, David A <David.Mitchell@novascotia.ca>; Mosher, Elaine <Elaine.Mosher@novascotia.ca>; Hurlburt, Donna D <Donna.Hurlburt@novascotia.ca>; Wildlife EA <WildlifeEA@novascotia.ca>; Crewe, Tara <Tara.Crewe@novascotia.ca>; Power, Terrance <Terrance.Power@novascotia.ca>; Mahoney, Meagan

Date: November 27, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: J. Jason Flanagan, M.Sc.
Senior Environmental Advisor
Environmental Programs and Indigenous Relations
Transport Canada, Atlantic Region

Subject: **Rhodena Wind Project, Inverness County, Nova Scotia**

Scope of review:

This review focuses on the following mandate:

Transport Canada's mandate under the *Aeronautics Act* and *Canadian Navigable Waters Act* (CNWA).

List of Documents Reviewed:

Environmental Assessment (EA) Registration Document and associated appendices.

Details of Technical Review:

Civil Aviation:

We acknowledge that the Proponent is aware of the requirements under the *Aeronautics Act* and *Civil Aviation Regulations* (CARs). Can the Proponent confirm or share a copy of the Aeronautical Assessment Form that was submitted to Transport Canada, Civil aviation as noted in the EA Registration Document.

Navigation Protection Program:

It appears that the project may involve the construction of various watercourse crossings along access roads implicating non -scheduled waterways per the Canadian Navigable Waters Act (CNWA) and the proponent will need to consider the following:

The proposed project may require a CNWA approval.

****Note, that any bridges with piers placed below the high-water mark of a watercourse, always require an approval as outlined in the Major Works Order (and an application for approval would be required).**

Major Works Order

<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2019-320/index.html>

If the bridge is not a Major Work, the proponent can assess the individual watercourse crossings against the criteria in the **Minor Works Order** (Section 34 – Watercourse Crossings):

Minor Works Order

<https://laws.justice.gc.ca/eng/regulations/SOR-2021-170/index.html>

IF a specific watercourse crossing meets ALL the criteria in that section, they are considered Minor Works and do not require a Canadian Navigable Waters Act approval and would only be required to follow the Deposit and Publication requirements in sections 3(2), 3(3) and 4 of the Minor Works Order.

IF a specific watercourse crossing does NOT meet ALL the criteria, the proponent may be required to submit an application for approval.

Under the Canadian Navigable Waters Act (CNWA), owners of works – other than a minor work or a major work – including culverts, bridges and watercourse crossings that are located on navigable waterways not listed in the schedule, have the option to:

1. either apply to the Minister of Transport for an approval; (approval review process and advertising and 30 day registry public review)
or
2. seek authorization through the public resolution process, and deposit specific information regarding their work on the new Common Project Search (online registry) inviting any interested party to comment (advertising and 30 day registry public review).

Both the application process and the public resolution process on the Registry can be accessed at the following link: [External Submission Site for the Navigation Protection Program](#) (create an account first if needed)

Additional guidance information and links for the NPP regulatory process can be found here:

Canadian Navigable Waters Act

<https://www.tc.gc.ca/eng/programs-632.html>

<https://www.tc.gc.ca/eng/canadian-navigable-waters-act.html>

Navigation Protection Program, Transport Canada

<http://www.tc.gc.ca/eng/programs-621.html>

NPP Contact coordinates:

Navigation Protection Program | Programme de protection de la navigation

Transport Canada - Atlantic Region / Heritage Court, 6th Floor, 95 Foundry Street,
Moncton, N.B. E1C 5H7 |

Transports Canada - Région de l'Atlantique / Place Héritage, 6e étage - 95 rue Foundry,
Moncton, N.-B. E1C 5H7

Tel / Tél. : 506-851-3113 / Fax | Téléc. : 506-851-7542

Email / Courriel : NPPATL-PPNATL@tc.gc.ca

Transport Canada has introduced new fees for services, under the Canadian Navigable Waters Act, as part of the Fee Modernization initiative. Find out more at: [Canada Gazette, Part 2, Volume 158, Number 14: Canadian Navigable Waters Act Fees Regulations](#)

Transports Canada introduit une nouvelle structure de redevances, en vertu de la Loi sur les eaux navigables canadiennes, dans le cadre de l'initiative de modernisation des frais. Plus d'informations ici: [La Gazette du Canada, Partie 2, volume 158, numéro 14 : Règlement sur les droits relatifs à la Loi sur les eaux navigables canadiennes](#)

Key Considerations: (provide in non-technical language)

Noted above.

Agriculture

Date: November 26, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Heather Hughes, Executive Director, Policy and Corporate Services,
Nova Scotia Department of Agriculture

Subject: Rhodena Wind Project
Creignish, Inverness County, Nova Scotia

Thank you for the opportunity to review the documents for the above-noted project.

No agricultural impacts are anticipated given that:

- The project is located on Class 7 and Class 0 lands. Class 7 lands have 'no capability for arable agriculture or permanent pasture'. Class 0 are 'organic soils' which are excluded from agricultural capability assessment (e.g. wetlands).
- There is no agricultural land within a 2 km radius buffer around the project site. Within the buffered area, 95% of land is Class 7.
- The closest agricultural lands are ≥ 2.1 km from the project site and are classed as 'agricultural rotational'.
- The nearest registered farm is 4.2 km from the project site.

DATE: November 27, 2024

TO: Jeremy Higgins, Environmental Assessment Officer

FROM: Christina Lovitt, Director of Planning

SUBJECT: RHODENA WIND PROJECT, INVERNESS COUNTY

Comment:

As requested, the Department of Municipal Affairs and Housing (DMAH) has reviewed the Registration Documents provided by ABO Energy Canada Ltd. for the environmental assessment of the above-noted project. All components considered under DMAH's areas of mandate have been adequately addressed.

Scope of Review:

This review focuses on the following mandates: the Statements of Provincial Interest and engagement with municipalities.

Technical Comments:

There is currently no designated municipal zoning in this area of the Municipality of the County of Inverness. The proponent has reached out to the Municipality to provide information on the project and ask for comment. Since 2023, the proponent has presented and discussed the project with municipal Council, CAO and staff.

Statements of Provincial Interest:

- **Drinking Water:** No anticipated impact. Not near a source of municipal drinking water or residential property.
- **Agricultural Land:** No anticipated impact. No identified agricultural land in the area.
- **Flood Risk:** No anticipated impact. Not in an identified flood risk area.
- **Infrastructure:** No anticipated impact.
- **Housing:** No anticipated impact. Only one residential structure is in the study area, and it is 1.2km from any proposed turbine.

Summary of Recommendations *(provide in non-technical language):*

The Municipality of the County of Inverness is in the final stages of developing its Municipal Planning Strategy and Land Use By-law. The proponent should continue to engage with the Municipality to ensure that there will not be any future land use conflicts while zoning for the area is being considered.

Date: November 26, 2024

To: Jeremy Higgins, Environmental Assessment Officer

From: Water Branch, Sustainability & Applied Science Division

Subject: Rhodena Wind Project, Inverness County, Nova Scotia

Scope of review:

This review focuses on the following mandate: surface water quality and quantity, groundwater quality and quantity, and wetlands.

List of Documents Reviewed: Environmental Assessment Registration Document (EARD) Submission, including Appendices.

Details of Technical Review:

Surface Water

The EARD stated that indirect impacts due to sedimentation and erosion would be mitigated with best management practices and committed to developing an ESC plan. To further mitigate risks to water bodies and watercourses, the ESC plan should be tailored to site-specific conditions and should include measures to capture any material eroded from disturbed areas before it reaches watercourses in addition to targeting stream banks and minimizing exposed disturbed areas.

The EARD stated that impacts due to altered hydrology would be minimized by using ditches, vegetated swales, and properly sized culverts. Integrating these into a site surface water management (SWM) plan would further mitigate these risks.

As stated in the EARD, direct interactions with waterbodies are not anticipated, however, to avoid any indirect impacts, the ESC and SWM plans should consider areas that drain to these waterbodies, which are identified in the EARD as significant wood turtle habitat.

Groundwater

According to the EARD, the potential for impacts to the geophysical environment, which includes topography, geology, and groundwater, is considered “moderate”, with any effects anticipated to be intermittent, reversible, and not significant. The EARD identified proposed mitigations to reduce the potential for impacts on groundwater quality and quantity, including:

- Conducting blasting in accordance with provincial requirements
- Conducting a pre-blast survey for water supply wells within 800 meters
- Identifying sulphide bearing materials and planning work to minimize disturbance and exposure

According to the EARD, there are 101 drilled wells identified within NSECC's Well Logs Database that are located within 2 kilometres of the study area, one of which is identified as possibly being within the study area. The presence and location of private wells within 800 meters of any blasting site should be verified in the field. Blasting within 800 meters of any existing residences should be avoided where possible.

Wetlands

The EARD identified 36 wetlands within the Assessment Area with up to 14 potentially requiring alteration. The EARD identified three wetlands of special significance (WSS) due to the confirmed presence of Canada Warblers which are listed as Endangered under the Nova Scotia Endangered Species Act and Threatened under the federal Species At Risk Act (SARA). One WSS is located in a proposed turbine pad, one is located along a pre-existing road, and one is located along the proposed collector line corridor. The EARD states that impacts to these wetlands are not anticipated as they can be avoided during detailed design.

The proponent has considered impacts to wetlands and avoided wetlands where practicable. The mitigations highlighted in the EARD should reduce the anticipated impacts to wetlands.

Key Considerations: (provide in non-technical language)

Surface Water

Mitigative measures proposed in the EARD including erosion and sediment control and measures to minimize impacts of altered hydrology would reduce risks to surface waters posed by the project. To further minimize risks, these measures could be integrated into a holistic site-specific ESC and SWM plans before construction begins.

Groundwater

In general, the proponent's proposed mitigations should reduce the potential for impacts on groundwater quality and quantity. Should blasting occur, a pre-blast survey should be completed for all private water supply wells located within 800 meters of a blasting site. The location of private wells within an 800 m radius of all blasting sites should be verified in the field.

Wetlands

Additional micro-siting should be completed to reduce and avoid additional wetland alteration, to the extent possible, during the detailed design phase. If the project is approved, the proponent should also submit a Wetland Alteration Approval Application for review and approval for any wetlands proposed to be directly or indirectly altered and complete any necessary compensation and monitoring. The proponent should utilize Nova Scotia's Wetland Alteration Application's Guided Template for the permit applications. Flagging of the wetland boundaries adjacent the construction areas should occur to prevent un-intended wetland alterations.



FW: EA Registration - Rhodena Wind Project - ABO Energy Canada Ltd - comments due November 27, 2024 (EAS# 24-NS-017)

From Wade,Suzanne (ECCC) <suzanne.wade@ec.gc.ca>

Date Thu 2024-11-28 09:34

To Higgins, Jeremy W <Jeremy.Higgins@novascotia.ca>

Cc Aikens,Marley (elle | she, her) (ECCC) <Marley.Aikens@ec.gc.ca>; Morais,Tania (elle | she, her) (ECCC) <Tania.Morais@ec.gc.ca>; Hingston,Michael (il | he, him) (ECCC) <Michael.Hingston@ec.gc.ca>; Wade, Suzanne (EC) <suzanne.wade@canada.ca>

 2 attachments (1 MB)

Survey Protocol for SAR bats within Treed Habitats_Ontario_2017 (003).pdf; Wind_CWS Atlantic Guidance Update for Wind Energy and Migratory Birds - April 2022_EN (1).pdf;

You don't often get email from suzanne.wade@ec.gc.ca. [Learn why this is important](#)

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Good Morning Jeremy,

Environment and Climate Change Canada (ECCC) Canadian Wildlife Service (CWS) has reviewed the EA Registration Document (EARD) for the Rhodena Wind Energy Project (24-NS-017) located near Creignish, NS, and offer the following comments.

WILDLIFE COMMENTS

Attachments and References

- ECCC 2022. *Environment and Climate Change Canada's Canadian Wildlife Service (Atlantic Region) - Wind Energy & Birds Environmental Assessment Guidance Update* (attached)
- Ontario Ministry of Natural Resources and Forestry 2017. *Survey Protocol for Species at Risk Bats within Treed Habitats, Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (attached). **Note:** there is a 2022 update, but our expert recommends the Phased approach described in the 2017 guidance.
- ECCC 2007. *Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds*.
https://publications.gc.ca/collections/collection_2013/ec/CW66-364-2007-eng.pdf

General Comments

1. ECCC notes that our comments on the Proponent's *Scoping Baseline Monitoring Plans at Three Proposed Wind Energy Sites: Rhodena, Melvin Lake & Sandy Point*, NS document (provided May 5, 2022) remain applicable to the Project.
2. Given that the Project is registered under Nova Scotia's (NS) *Environmental Assessment Regulations*, it remains the discretion of the province whether sufficient information has been provided to assess the potential effects of the Project under their jurisdiction and responsibility. ECCC does not have any permits (or authorizations) or approvals in relation to the proposed project. Any advice provided by ECCC is intended to support Nova Scotia Environment and Climate Change (NS ECC) Environmental Assessment review process. The Proponent is responsible for identifying measures which ensure their compliance with the *Migratory Birds Convention Act* (MBCA) and the *Species at Risk Act* (SARA).
3. ECCC notes that the Province of NS's Department of Natural Resources and Renewables (NS DNRR) holds technical expertise, jurisdiction, and management authority for birds not protected by the MBCA (e.g., raptors) and terrestrial SAR including bats, reptiles, amphibians, land-mammals, insects, plants, and lichen. ECCC advice on these species is derived from federal recovery strategies focused on species recovery.

4. The Environmental Assessment Registration Document (EARD) registration document includes hedging and ambiguous wording, such as, “*where possible*” and “*to the extent possible*” when describing mitigation measures.

ECCC recommends removing ambiguous wording from the EA and associated plans. The EA should clearly describe commitments to mitigation measures to avoid/minimize potential effects of the Project on migratory birds and species at risk (SAR), and where effects cannot be avoided/minimized, a proposed plan to mitigate residual impacts should be described (e.g., monitoring plan, scheduling, buffers, offsetting measures, etc.). Contingency plans identifying mitigation measures should be prepared to address all scenarios that may impact migratory birds and SAR during all of times of the year and all project phases.

5. The proponent should retain raw survey data (e.g., radar, breeding bird surveys) until appropriate data standards have been developed.

Proponents are encouraged to share and store data with:

- The Atlantic Canada Conservation Data Center (SAR/SOCC observations; <http://accdc.com/en/contribute.html>)
- NA Bat (acoustic bat data; <https://www.nabatmonitoring.org/upload-data>)
- The Wind Energy Bird and Bat Monitoring Database (bird and bat data; <https://naturecounts.ca/nc/wind/main.jsp>)

6. If considering wildlife protection, mitigation, monitoring, and adaptive management plans as part of potential approval conditions related to avifauna and/or migratory bird SAR, ECCC recommends clarifying what elements are expected to be included, and that the consultation process is clear for all parties.

ECCC's preference is that any documents and requests for advice from the proponent be submitted and coordinated through NS ECC as part of their EA process via the ECCC-EA window (FCR_Tracker@ec.gc.ca).

Specific Comments

Lichen SAR

7. ECCC notes that the following lichen SAR were observed in the study area: Blue Felt Lichen (SARA-listed Special Concern, eight occurrences), Frosted Glass-whiskers (SARA-listed Special Concern, four occurrences).

ECCC offers the following recommendations for avoiding/minimizing project impacts and supporting species recovery of Blue Felt Lichen and Frosted Glass-whiskers in Nova Scotia:

- Implement a minimum 100 m habitat buffer for all individuals of Blue Felt Lichen that would not be directly affected by the project. For any individuals where a 100 m habitat buffer would not be implemented, the proponent should identify measures to avoid/minimize the effects.

- Provide a lichen SAR monitoring program including all sites where lichen SAR have been detected in the Assessment Area, and proposed monitoring and adaptive management measures in the event that adverse effects to lichen SAR are detected.
- Consult recovery documents to inform development of mitigation strategies to avoid direct and indirect impacts:
- The Management Plan for Blue Felt Lichen (*Degelia plumbea*) in Canada [Final] (2022): <https://species-registry.canada.ca/index-en.html#/consultations/3645>
- The Management Plan for the Frosted Glass-whiskers (*Sclerophora peronella*), Nova Scotia Population, in Canada [Final] (2011): https://species-registry.canada.ca/index-en.html#/species/739-578#management_plans
- Mitigation strategies and plans should be provided for review as part of the EA and support significance conclusions.

Herpetofauna SAR

8. Quote (pg. 183, Section 7.4.3.3): “[...] *there is a confirmed Wood turtle occurrence within the Study Area [...].*”

Quote (pg. 177, Section 7.4.3.6): “*A portion of the southern section of the Study Area, surrounding the transmission line, overlaps with Wood turtle critical habitat [...].*”

The proponent stated that no SAR turtles were observed during targeted surveys in the Assessment Area. However, suitable Wood Turtle nesting habitat was observed along one watercourse, overlapping with the Assessment Area along the proposed transmission line.

ECCC offers the following recommendations for avoiding/minimizing project impacts and supporting species recovery:

- The proponent should identify mitigation measures to avoid impacts on Wood Turtle individuals during sensitive periods, including measures for individuals travelling to nesting and overwintering habitats during construction activities;
- September is the pre-overwintering period when Wood Turtles are in the forest. Hatchlings can emerge from nests in early September to early October. If Wood Turtles are present at this site, ECCC recommends that clearing occur no earlier than mid-October to avoid risk of destruction of individuals;
- Consult recovery documents to inform development of mitigation strategies to avoid direct and indirect impacts:
- The Recovery Strategy for Wood Turtle (*Glyptemys insculpta*) in Canada [Final] (2020) available at: <https://species-registry.canada.ca/index-en.html#/consultations/2864>

Bat SAR

9. Quote (pg. 196, Section 7.4.4.6): “[...] bat activity is low within the Study Area compared to baseline data collected at the locations of other wind energy projects [...].”

ECCC notes that the following SAR/SOCC bat species/groups were detected during baseline monitoring: Myotis species (i.e., Little brown myotis and/or Northern myotis; SARA-listed Endangered), Tri-colored bat (SARA-listed Endangered), Hoary bat (COSEWIC-assessed Endangered), Silver-haired bat (COSEWIC-assessed Endangered), and Eastern red bat (COSEWIC-assessed Endangered).

ECCC notes that low bat activity pre-construction is insufficient to conclude that risks to SOCC/SAR bats is low. The populations of the three SARA-listed bat species (Little Brown Myotis, Northern Myotis, and Tricolored Bat) are highly depressed in NS, primarily due to introduction of White-nosed Syndrome (WNS), and therefore few acoustic detections are expected. Additionally, the three “migratory” bats, which have been assessed by COSEWIC as Endangered, are highly vulnerable to mortality due to wind turbines. Any additional loss of SOCC/SAR bat individuals, maternity roosts, or and/or hibernacula remaining on the landscape can be biologically significant for these long-lived, k-selected species, and affect their recovery.

ECCC recommends that monitoring, mitigation measures, and adaptive management plans consider the COSEWIC-assessed migratory bat species as though they are SARA-listed SAR, in the event that they become listed during the lifetime of the Project.

Additionally, ECCC recommends including EIA commitments to mitigation measures for minimizing potential impacts to SARA and COSEWIC-listed Endangered bat SAR during the project’s operational phase *before* impacts occur, such as increasing cut-in speeds or altering the pitch/feathering the blades during high-risk collision periods (e.g., during migration or swarming or when wind velocity is low).

10. While ECCC acknowledges that there is currently no regulatory threshold available for “acceptable” levels of bat mortality at wind farm sites, the Proponent’s use of the Government of Alberta’s Bat Mitigation Framework for Wind Power Development (2013) to assess potential impacts to bats is inappropriate for this project.

The Government of Alberta (2013) thresholds are based on SAR bat populations in Alberta over ten years ago, and therefore likely do not reflect the current level of risk, particularly in Nova Scotia. Although some studies report fewer bat mortalities at wind energy sites in recent years, this likely reflects a decline in overall abundance of bats rather than avoidance of turbines (Davy et al. 2021). Given the population trends of migratory SAR

bats in Canada, ECCC is of the view that there is no level of mortality that is acceptable for these species.

Additionally, the bat passes per detector night metrics presented in the Government of Alberta (2013) guidance were developed as a benchmark for data collected during fall migration only. Therefore, the proponent's metric should have been calculated for number of detector nights between August to early September, rather than the entire survey period.

11. Quote (Section 12.3.4.2, pg. 100): *“Potential roosting habitat was observed in select sites within the Study Area, mainly in wetlands containing large snags and mature hardwood forests. However, other significant habitat features, including caves, karst formation, and abandoned mines that could serve as hibernacula or overwintering sites, were not observed during field assessments and a desktop review found that there is no significant habitat for bats within the study area.”*

ECCC notes that it is unclear what methods the proponent used to identify potential roosting habitat and other SAR bat habitat features. Additionally, the proponent has not identified sufficient measures to avoid project-related impacts to potential roosting habitat at the site.

Site selection is the most important component of a successful mitigation strategy for wind power development, with turbines located as far away as possible from important bat habitat features (hibernacula, potential maternity roosts). ECCC recommends that the proponent identify and map areas with suitable maternity roosting habitat (e.g., tolerant old hardwood) and avoid siting turbines and roads in these areas.

Acoustic surveys can be completed at potential maternity roost trees in areas to be cleared to confirm occupancy, noting that it can be challenging to confirm roosting for species that forage in high-clutter habitats (e.g., Northern Myotis). Moreover, due to roost switching within a season, a single emergence survey by a human observer is not sufficient to confirm roosting. Therefore, siting infrastructure away from suitable habitat should be the primary avoidance measure for SAR bats.

In areas to be cleared, ECCC recommends that the proponent complete targeted habitat surveys using the *“Survey Protocol for Species at Risk Bats within Treed Habitats, Little Brown Myotis, Northern Myotis & Tri-Colored Bat”* (OMNRF, 2017) (**attached**). An excerpt from the draft bat residence description for Little Brown Myotis and Northern Myotis is available for consideration in identifying bat maternity roosting habitat (Appendix 1 below).

ECCC recommends that the Proponent identify mitigation measures to protect bat residences as part of the EA, should they be suspected or confirmed during surveys.

Migratory Birds

12. Quote (Table 2.1, pg. 4): “*there is no expectation that a MBCA permit will be required.*”

Should the Project be approved, ECCC notes that post-construction monitoring for migratory birds would require a *Migratory Birds Regulations* (MBR 2022) permit. Under the MBR 2022, a scientific permit is required to possess and handle any dead migratory birds used for observer efficiency or scavenging trials (ECCC, s.10.4 2007) and is recommended for the collection of a migratory bird (dead or alive), feathers, or part of a migratory bird (as defined in the *Migratory Birds Convention Act* [MBCA]) found during post-construction monitoring activities (e.g., carcass searches). To apply for an MBR permit, proponents should contact the ECCC-CWS permitting office at: SCF-ATLPermis-CWS-ATLPermits@ec.gc.ca.

13. ECCC notes that the following avian SAR were observed during baseline surveys in the Study Area:
- Common Nighthawk (SARA-listed Special Concern): observed during breeding bird surveys, nightjar surveys, and acoustic monitoring during spring and fall migration
 - Canada Warbler (SARA-listed Threatened): observed during spring migration, fall migration, and breeding bird surveys (in suitable habitat; possible breeder), and acoustic monitoring (spring and fall)
 - Eastern Wood-pewee (SARA-listed Special Concern): Observed incidentally during the breeding season in suitable habitat (possible breeder)
 - Evening Grosbeak (SARA-listed Special Concern): Observed during spring migration surveys
 - Olive-sided Flycatcher (SARA-listed Threatened): Observed during fall migration surveys

If the Project is approved, ECCC recommends that the proponent include targeted mitigation measures for these species, as well as other SAR potentially occurring in the area (based on desktop review) in any Management Plans developed for the Project.

Additionally, ECCC requests that any species at risk sightings be reported to ECCC-CWS at scf-atldonneesei-cws-atliadata@ec.gc.ca. SAR observations should also be submitted to the Atlantic Canada Conservation Data Centre. Directions on how to contribute data can be found at: <http://accdc.com/en/contribute.html>.

14. ECCC recommends that Canada Warbler habitat models also include FORNON code 38, where alders are less than 75% crown closure. Canada Warbler prefer wet areas with heavy shrub layer, which could include alders and/or other species (e.g., highbush blueberry, viburnum, trembling aspen,

etc.). For the SPECIES field, SP1, 2, or 3 with Eastern Cedar are recommended to be included as well (though none may exist at this site).

Additionally, ECCC recommends that Eastern Whip-poor-will habitat models include mature mixedwoods as well as hardwoods under COVER_TYPE.

15. Quote (pg. 236, Section 7.4.5.9): *“During spring and fall migrations surveys, no large flocks of migrating birds were recorded, indicating no migration pathways will be disrupted by the Project. Peak migratory activity appeared to occur over a period of five to seven days spread throughout the season.”*

Quote (pg. 225, Section 7.4.5.8): *“...the largest volume of targets detected and the highest proportion of targets within the RSZ [occurred] in late September (Figure 7.13). Across the fall migration period, the volume of detected targets was highest between 70 and 150 m (Figure 7.14).”*

Despite no “large flocks” (defined as “flocks of birds numbering in the hundreds” on page 214 of the EARD) being observed during diurnal migration surveys, the radar data indicate considerable activity within the rotor swept zone (RSZ) (i.e., below 200 m) at night, particularly during fall migration.

ECCC notes that the volume of targets within the RSZ warrants additional measures to mitigate potential impacts to birds and bats during spring and fall migration periods when the project is operational. Based on the level of concern for the project (Category 4)(ECCC 2007, ECC 2022), ECCC recommends that the proponent follow the precautionary principle and identify these measures as part of the EA commitments which will avoid impacts on migratory birds and bats *before* they occur (e.g. blade feathering, increased cut-in speeds, remote temporary shut downs based on weather conditions, peak migration periods and times). Additionally, ECCC recommends that the proponent develop adaptive management plan(s) and undertake post-construction monitoring to monitor residual effects (ECCC 2022).

16. Quote (pg. 235, Section 7.4.5.9): *“Fatalities can also occur from collisions with meteorological evaluation towers and guywires, through nest mortality/disturbance from clearing of vegetation, or through vehicle collisions.”*

ECCC notes that transmission and collector lines (“power lines”) also have the potential to harm, injure, or kill migratory birds due to collision and electrocution. The effects of transmission/collector lines on migratory birds and mitigation measures to avoid/reduce these effects should be discussed in the EARD.

The proposed placement of above-ground power lines should consider areas used as flight paths by migratory birds during migration, near

shorebird staging and foraging involving overland daily movements, or while travelling from nesting to foraging areas, and/or along streams used by waterfowl.

ECCC recommends the following general beneficial management practices to avoid potential harm to migratory birds associated with power lines:

- Avoid building transmission, collection, or distribution lines over, adjacent, or near areas where birds are known to congregate or move, including:
 - Important breeding, staging, moulting areas;
 - Breeding colonies; and
 - Between breeding and foraging areas.
- Consider installing underground power lines in high-risk areas for bird collisions.
- Design “avian-safe” configurations to reduce the risk of electrocutions, including:
 - Providing sufficient separation between energized phase conductors and between phases and grounded hardware;
 - Insulating exposed surfaces in high-risk areas;
 - Installing perch-management (e.g., perch guard) devices on poles; and
 - Removing or minimizing vegetation around poles and lines.
- Install measures on lines that reduce the risk of collisions:
 - Provide minimal vertical separation between lines;
 - Use self-supporting structures to reduce the number of guy wires; and
 - Use line-marking devices to increase the visibility of the lines.

ECCC recommends that the Proponent refer to Avian Power Line Interaction Committee (www.aplic.org) for an understanding of avian risks from powerlines and guidance. For information on avian deflector (“bird diverter”) use and optimal design, ECCC recommends referencing the following:

<https://www.sciencedaily.com/releases/2020/06/200624151533.htm>

17. The following mitigation measure regarding power lines is listed on page 241 (Section 7.4.5.9):

- *Install avian deflectors on powerlines, including any powerline spans, or areas of line identified as requiring mitigation based on monitoring results.*

While ECCC supports the installation of avian deflectors on power lines, it is unclear how the proponent intends to assess areas of line requiring mitigation, as they have not stated elsewhere that the scope of post-construction monitoring will include power lines. For instance, on page 241 of the EARD the proponent states that monitoring activities may include “*post-construction avian mortality monitoring to assess mortality levels*”

caused by turbine operations”, with no mention of mortality caused by power lines specifically.

ECCC supports including power lines in the scope of the avian post-construction monitoring plan. However, in addition to this we recommend that the proponent install avian deflectors proactively in high-risk areas, rather than reactively based on monitoring results (i.e., *after* death or injury has occurred).

18. ECCC notes that Common Nighthawk (SARA-listed Special Concern) was observed during nightjar and breeding bird surveys, as well as during acoustic monitoring, where the species was detected in spring and fall during both monitoring years (2022 and 2023). Additionally, Bank Swallow (SARA-listed Threatened) may occur in the Assessment Area based on desktop review. These species, as well as other ground or burrow-nesting migratory birds, may be attracted to stockpiles or exposed areas for nesting, particularly if there is a delay between clearing activities and subsequent construction activities.

In such instances, active nest surveys of the cleared areas may be carried out successfully by skilled and experienced observers using appropriate scientific methodology. Should any nests or unfledged chicks be discovered, protection by an appropriate-sized buffer is expected.

The following mitigation measure regarding ground and burrow-nesting birds is listed on page 240 (Section 7.4.5.9):

- *“Should any ground or burrow-nesting species initiate breeding activities within stockpiles or exposed areas during construction or operations, the Proponent will avoid disturbance to these areas until chicks have fledged and the nesting areas are no longer being utilized.”*

In addition to the above, ECCC recommends that the proponent develop measures to deter birds from nesting in these areas, such as covering exposed areas or stockpiles when not in use and minimizing the delay between clearing and subsequent construction activities.

ECCC also recommends that the proponent reference the following recovery documents to inform the development of mitigation measures for these species:

- Recovery Strategy for the Common Nighthawk (*Chordeiles minor*) in Canada [Final] (2016): https://species-registry.canada.ca/index-en.html#/species/986-668#recovery_strategies
- Recovery Strategy for the Bank Swallow (*Riparia riparia*) in Canada [Final] (2022): https://species-registry.canada.ca/index-en.html#/species/1233-894#recovery_strategies

19. Common Nighthawk (CONI) may have a higher collision risk with turbines/blades than other bird SAR recorded during the breeding period, as these species are aerial insectivores known to occupy open habitat areas in search of flying insects. They are crepuscular, and potentially nocturnal, flying at various heights in search of food. They also defend their territories by aerial displays (wing booms) that might make them more susceptible to collisions if they choose to nest close to turbines.

ECCC recommends that the Proponent clearly map the locations where CONI were detected in the Assessment Area in relation to proposed project infrastructure and the results of the proponent's suitable habitat mapping for CONI. Additionally, ECCC recommends that the proponent clarify whether areas with higher occurrence of CONI and/or modelled suitable breeding habitat will be avoided during micro-siting of turbines.

ECCC recommends that the proponent avoid/lessen impacts on CONI and their habitat, identify mitigation measures, and a monitoring plan, including post construction nightjar surveys (dusk and dawn) and mortality monitoring to monitor and prevent bird strikes during the breeding season, and adaptive management measures should effects be detected.

Nightjar surveys will help to determine if these species continue to breed in the area post-construction or if they are being displaced by the project, and mortality surveys will assist in determining whether these species are colliding with turbines/turbine blades or are able to avoid them while foraging at night.

ECCC recommends referencing the most recent version of the Canadian Nightjar Survey (CNS) Protocol when planning nightjar surveys. Note that because some nightjar surveys are tied to the lunar cycle, the CNS protocol is updated annually to reflect optimal survey dates for a given year.

20. The following mitigation measures regarding lighting are listed on page 241 (Section 7.4.5.9):

- *Incorporate a lighting plan for construction-related activities.*
- *Minimize lighting, to the extent possible.*

Additional information on lighting plans and lighting-related mitigations is required to adequately assess potential impacts of lighting and residual effects on migratory birds during all project phases. ECCC generally recommends including lighting plan(s) and detailed mitigations as part of the EA to support EA conclusions.

Attraction of migratory birds and SAR to light at night or in poor visibility conditions during the day may result in collision with lit structures, their support structures, or with other migratory birds. Disoriented migratory birds are prone to circling light sources and may deplete their energy reserves

and either die of exhaustion or be forced to land where they are at risk of depredation.

To reduce the risk of disturbance to migratory birds related to human-induced light, ECCC recommends implementation of the following beneficial management practices:

- The fewest number of site-illuminating light possible should be used in the project area. Only strobe lights should be used at night, at the lowest intensity and smallest number of flashes per minute allowable by Transport Canada.
- Lighting for the safety of the employees should be shielded down and only to where it is needed.
- LED lights should be used instead of other types of light where possible. LED light fixtures are less prone to light trespass (i.e., are better at directing light where it needs to be, and do not bleed light into the surrounding area), and this property reduces the incidence of migratory bird attraction.

If the Project is approved, ECCC recommends including detailed lighting-related mitigations to avoid/reduce effects on migratory birds in the Project's Environmental Management Plan and/or Wildlife Management Plan, should the(se) plan(s) be required.

21. The following mitigation measure regarding revegetation is listed on page 241 (Section 7.4.5.9):
- *Revegetate disturbed areas, as appropriate.*

ECCC recommends using a variety of plant species native to the general project area in revegetation efforts. Should seed mixes for herbaceous native species for the area not be available, it should be ensured that plants used in revegetation efforts are not known to be invasive. These measures should be detailed in the Project's Environmental Management Plan and/or Wildlife Management Plan, should the(se) plan(s) be required for the Project.

22. Quote (pg. 241): "*A site-specific post-construction Wildlife Management Plan will be developed in consultation with NSECC, NSNRR, and all other relevant parties.*"

To avoid and minimize impacts to migratory birds and species at risk and their habitats, ECCC recommends that the scope of the WMP include all phases of the Project from construction to decommissioning/reclamation.

23. ECCC notes that the EARD does not discuss potential impacts of the Project migratory shorebirds and other waterbirds using the Assessment Area during breeding and migration periods, nor discuss targeted mitigation measures for these species.

ECCC notes that four bogs were observed within the Assessment Area. During Fall, bog habitats are used by shorebirds such as Whimbrel, American Golden Plover and other species of conservation concern (SoCC) that use heathlands to stage and forage on small berries. Additionally, wetlands provide suitable nesting habitat for species such as American Bittern and Wilson's Snipe and feeding habitat for species such as Great Blue Heron.

If the Project is approved, ECCC recommends that the proponent include targeted mitigation measures for these species, as well as other migratory bird SoCC potentially occurring in the area (based on desktop review) in any Management Plans developed for the Project.

24. ECCC notes that although avifauna point count locations are relatively well-distributed within the Study Area and appear to cover most general habitat types, there are spatial gaps in survey coverage within the Assessment Area (see Drawing 7.27A). Specifically, there are no point count stations at any of the six turbine locations / laydown areas, nor the proposed access road located east of the two southern turbines. Additionally, it is unclear how point count stations were selected. ECCC generally recommends selecting point count locations randomly, but stratified by habitat type to ensure all available habitats used by migratory birds (including SAR/SOCC) are adequately sampled.

Based on the habitat types presented in Drawing 7.16, the turbine locations are sited predominantly in "Natural Stands" forests. If the habitat types at the proposed turbine locations are distinct from other habitats in the study area for which there is adequate survey coverage, further avian surveys may be warranted.

25. Quote (pg. 237): "...there are areas of suitable nesting habitat in adjacent lands and the regional area in general, as exhibited by habitat modelling for bird SAR (Drawings 7.28-7.32). It is expected that any birds utilizing habitat that will be disturbed by project activities will move to similar habitats within and adjacent to the Study Area."

ECCC does not agree with the above statement. If there are areas of high quality, suitable habitat nearby, it is likely these areas will already be in use by nesting migratory birds. Individuals whose habitat is disturbed would either be forced to marginal habitat, where they may not breed or successfully raise young, or outcompete other migratory birds for high quality habitat, i.e., force birds off their existing territories to marginal habitat. The effects on populations are the same in either scenario.

Wetlands

26. ECCC notes that the proponent estimates that about 1.22 ha of wetland has potential to be altered (both directly and indirectly) by the Project.

ECCC advocates for the conservation of wetlands, especially in areas where wetland losses have already reached critical levels (e.g., NB, NS, PEI, southern Ontario, Prairies), regionally important wetlands, and wetlands used by avian SAR and SOCC as part of their lifecycle (e.g., Canada Warbler, Chimney Swift, Olive-sided Flycatcher Common Nighthawk, Lesser Yellowlegs, Greater Yellowlegs, Spotted Sandpiper, Upland Sandpiper, etc.).

ECCC advocates for planning, siting, and designing a project in a manner that considers wetland mitigation options in a hierarchical sequence – avoidance, minimization, and as a last resort, compensation.

In assessing potential for avoidance and minimization impacts to wetlands and avian SAR and SOCC that use wetlands, ECCC recommends that the proponent consider implementing a 30-m buffer around wetlands of special significance (WSS) for all project infrastructure (e.g., turbine pads, access roads, transmission corridors, substation). Any vegetation clearing (even if temporary) should be considered an alteration requiring compensation or other measures to ensure wet soils and wetland functions are maintained for migratory birds and species at risk.

ECCC also recommends the following general measures:

- Developments on wetlands should be avoided;
- Hydrological function of the wetland should be maintained;
- Runoff from development should be directed away from wetlands;
- A 30-metre buffer from the high-water mark of any water body (1:100 Flood Zone) should be maintained in order to retain movement corridors for migratory birds. Please see <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html> for further information concerning buffer zones.

Applicable Legislation and Standard Advice

Migratory Birds Convention Act

The federal [Migratory Birds Convention Act](#) (MBCA) and its [regulations](#) protect migratory birds and their eggs and prohibit the disturbance, damage, destruction or removal of migratory bird nests that contain a live bird or a viable egg. Migratory birds are protected at all times; all migratory bird nests are protected when they contain a live bird or viable egg; and the nests of 18 species listed in [Schedule 1 of the MBR 2022](#) are protected year-round. These general prohibitions apply to all lands and waters in Canada, regardless of ownership. For more information, please visit:

<https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html>.

For migratory birds that are listed as Endangered, Threatened or Extirpated on Schedule 1 of the *Species at Risk Act* S.32 (protection of individuals) and S.33

(protection of residences) apply to all land tenure types in Canada. For some migratory bird species listed under the *Species at Risk Act* (SARA), the residence prohibition will protect nests that are not active but are re-used in subsequent years (please note that the residence of a migratory bird may not necessarily be limited to their nest).

Section 5.1 of the MBCA describes prohibitions related to depositing substances harmful to migratory birds:

“5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

(2) No person or vessel shall deposit a substance to be deposited in any place if the substance, in combination with one or more substances, result in a substance – in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area – that is harmful to migratory birds.”

The proponent is responsible for ensuring that activities are managed to ensure compliance with the MBCA and associated regulations.

Species at Risk Act

The Species at Risk Act (SARA) “General prohibitions” apply to this project. In applying the general prohibitions, the proponent, staff and contractors, should be aware that no person shall:

- kill, harm, harass, capture or take an individual;
- possess, collect, buy, sell or trade an individual, or any part or derivative;
- damage or destroy the residence of one or more individuals.

General prohibitions only apply automatically:

- on all federal lands in a province,
- to aquatic species anywhere they occur,
- to migratory birds protected under the Migratory Birds Convention Act (MBCA) 1994 anywhere they occur.

Section 33 of SARA prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. For migratory bird species at risk (SAR), this prohibition immediately applies on all lands or waters (federal, provincial, territorial and private) in which the species occurs.

ECCC-CWS notes that all comments it provides concerning species at risk that are not migratory birds derive from federal recovery/management plans as posted on the Species at Risk Registry (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>), and thus comments may not be comprehensive to the body of knowledge for the species.

For species which are not listed under SARA but are listed under provincial legislation only or that have been assessed and designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), it is best practice to consider these species in EA as though they were listed under SARA.

Fuel Leaks

The proponent must ensure that all precautions are taken by the contractors to prevent fuel leaks from equipment, and that a contingency plan in case of oil spills is prepared. Furthermore, the proponent should ensure that contractors are aware that under the MBCA, “*no person shall deposit or permit to be deposited oil, oil wastes or any substance harmful to migratory birds in any waters or any area frequented by migratory birds.*” Biodegradable alternatives to petroleum-based chainsaw bar oil and hydraulic for heavy machinery are commonly available from major manufacturers. Such biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices. Fueling and servicing of equipment should not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands.

ECCC-CWS recommend incorporating a Wildlife Emergency Response Plan into emergency response contingency plans for scenarios that may impact avifauna directly (injury or mortality e.g. polluting incident) or indirectly (collisions causing mortality, stranding due to light attraction).

For consideration in emergency response and contingency planning related to accidents and malfunctions, ECCC has prepared *Guidelines for Effective Wildlife Response Plans* (ECCC 2022) available online at:

<https://www.canada.ca/en/services/environment/wildlife-plants-species/national-wildlife-emergency-framework.html>. Plans should include:

- Measures to deter migratory birds from coming into contact with the oil or polluting substance;
- Measures undertaken if individuals of migratory birds and/or sensitive habitat become contaminated; and,
- The type, extent of monitoring, and reporting in relation to various spill events.

The proponent is responsible for ensuring that all precautions are taken by the contractors to prevent fuel leaks from equipment, and that a contingency plan is prepared in the case of spills. Furthermore, the proponent should ensure that contractors are aware of s.5.1 MBCA prohibitions.

Events involving a polluting substance should be reported to the 24-hour environmental emergencies reporting system: **1-800-565-1633**.

Bird mortality incidents of 10 or more birds in a single event, or an individual species at risk, should be reported via ECCC-CWS Main Office **(506) 364-5044**

or via email to [SCFATLEvaluationImpact-CWSATLImpactAssessment@ec.gc.ca](mailto:CWSATLEvaluationImpact-CWSATLImpactAssessment@ec.gc.ca).

Stockpiles

Certain species of migratory birds (e.g., Bank Swallows) may nest in large piles of soil left unattended/ unvegetated during the most critical period of breeding season (mid-April through late August). To discourage this, the proponent should consider measures to cover or to deter birds from these large piles of unattended soil during the breeding season. If migratory birds take up occupancy of these piles, any industrial activities (including hydroseeding) will cause disturbance to these migratory birds and inadvertently cause the destruction of nests and eggs. Alternate measures will then need to be taken to reduce potential erosion, and to ensure that nests are protected until chicks have fledged and left the area. For a species such as Bank Swallow, the period when the nests would be considered active would include not only the time when birds are incubating eggs or taking care of flightless chicks, but also a period of time after chicks have learned to fly, because Bank Swallows return to their colony to roost.

For additional information on designing mitigation measures for Bank Swallow, refer to the following guidance: <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/related-information/bank-swallow-sandpits-quarries.html>.

Invasive Species

Measures to diminish the risk of introducing invasive species should be developed and implemented during all project phases. These measures could include:

- Cleaning and inspecting construction equipment before transport from elsewhere to ensure that no vegetative matter is attached to the machinery (e.g., use of pressure water hose to clean vehicles before transport).
- Regularly inspecting equipment prior to, during and immediately following construction in areas found to support Purple Loosestrife to ensure that vegetative matter is not transported from one construction area to another.

Noise Disturbance

Anthropogenic noise produced by construction and human activity can have multiple impacts on birds, including causing stress responses, avoidance of certain important habitats, changes in foraging behavior and reproductive success, and interference with songs, calls, and communication. Activities that introduce loud and/or random noise into habitats with previously no to little levels of anthropogenic noise are particularly disruptive.