

Appendix B2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Adverse Effect	Performance Objective	Mitigation Strategy	Net Effects	Monitoring Plan and Contingency Measures
Heritage and Archaeological Resources					
Protected Properties and Cultural Heritage Resources	<ul style="list-style-type: none"> Disturbance to viewscape. 	<ul style="list-style-type: none"> Minimize potential for visual disturbance. 	<ul style="list-style-type: none"> See 'Viewscape'. Use of appropriate landscape design such as massing and screening. 	<ul style="list-style-type: none"> Minimal. 	<ul style="list-style-type: none"> See 'Viewscape'.
Archaeological Resources	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A
Natural Heritage Resources					
Significant Natural Heritage Features					
Provincial Parks and Conservation Reserves	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Wetlands	<ul style="list-style-type: none"> No direct loss of wetland habitat or function. Accidental chemical and/or fuel spills and contamination. Improper waste disposal (fluids, containers, cleaning materials) could also have a negative impact. 	<ul style="list-style-type: none"> No spills. Proper waste disposal. Minimize disturbance to wetlands 	<ul style="list-style-type: none"> Mitigation measures for spills include: <ul style="list-style-type: none"> Standard containment facilities and emergency response materials (spill kits) will be maintained on-site as required. Refuelling, equipment maintenance, and other potentially contaminating activities will occur in designated areas and, as appropriate, spills should be reported immediately to the MOE Spills Action Centre. In the event of a potential discharge of fluids associated with Project operation, a contractor or employee will immediately stop work, when safe to do so, and rectify the accidental spill. Once the spill is under control an appropriately trained Contractor will retained to remove contaminated soil and dispose of it in accordance with the current appropriate provincial legislation, such as Ontario Regulation 347, the General – Waste Management Regulation. The operations and maintenance program will contain procedures for spill contingency and response plans, spill response training, notification procedures, and necessary cleanup materials and equipment. As per s.13 of the Environmental Protection Act, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, and are in excess of prescribed regulatory levels should be reported to the MOE's Spills Action Centre. Avoidance of wetlands. 	<ul style="list-style-type: none"> Minimized or avoided during operation 	<ul style="list-style-type: none"> Detailed mitigation measures for the Project are provided in the <i>NHA/EIS</i> and the <i>NHA/EIS Addendum</i>. An <i>Emergency Response and Communications Plan</i> would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Areas of Natural and Scientific Interest	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A
Woodlands	<ul style="list-style-type: none"> Accidental chemical and/or fuel spills and contamination. Improper waste disposal (fluids, containers, cleaning materials) could also have a negative impact. 	<ul style="list-style-type: none"> No spills. Proper waste disposal. Minimize disturbance to woodlands. 	<ul style="list-style-type: none"> See mitigation measures for spills under 'Wetlands'. During operations, the Proponent and/or the Operation and Maintenance Contractors would implement a site-specific waste collection and disposal management plan, which may include good site practices such as: <ul style="list-style-type: none"> Systematic collection and separation of waste materials within on-site storage areas in weather-protected areas located at the operation and maintenance building; Contractors would be required to remove all 	<ul style="list-style-type: none"> Minimized or avoided during operation 	<ul style="list-style-type: none"> Detailed mitigation measures for the Project are provided in the <i>NHA/EIS</i> and the <i>NHA/EIS Addendum</i>. An <i>Emergency Response and Communications Plan</i> would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.

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			<p>waste materials from the turbine siting areas during maintenance activities;</p> <ul style="list-style-type: none"> ○ All waste materials and recycling would be transported off-site by private waste material collection contractors licensed with a Certificate of Approval – Waste Management System; ○ Dumping or burying wastes within the Project sites would be prohibited; ○ Disposal of non-hazardous waste at a registered waste disposal site(s); ○ If waste is classified as waste other than solid non-hazardous, a Generator Registration Number is required from the MOE and the generator would have obligations regarding manifesting of waste. Compliance with Schedule 4 of Regulation 347 is mandatory when determining waste category; and ○ Implementation of an on-going waste management program consisting of reduction, reuse, and recycling of materials. 		
Valleylands	<ul style="list-style-type: none"> • Accidental chemical and/or fuel spills and contamination. • Improper waste disposal (fluids, containers, cleaning materials) could also have a negative impact. 	<ul style="list-style-type: none"> • No spills. • Proper waste disposal. • Minimize disturbance to valleylands. 	<ul style="list-style-type: none"> • See mitigation measures for spills under 'Wetlands'. • See mitigation measures for waste under 'Woodlands'. 	<ul style="list-style-type: none"> • Minimized or avoided during operation 	<ul style="list-style-type: none"> • Detailed mitigation measures for the Project are provided in the <i>NHA/EIS</i> and the <i>NHA/EIS Addendum</i>. • An <i>Emergency Response and Communications Plan</i> would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Significant Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> • Potential direct mortality of herons, waterfowl, raptors, bats. • Avoidance behaviour of herons, waterfowl, raptors, bats, as appropriate. • Accidental chemical and/or fuel spills and contamination to rare vegetation communities. • Direct mortality of amphibians may result due to vehicles using the access roads. • Risk of collision on access roads to Snapping Turtle. • Sensory disturbance of amphibians using the corridors. 	<ul style="list-style-type: none"> • Minimize disturbance to wildlife and wildlife habitat. 	<ul style="list-style-type: none"> • Vehicle traffic shall primarily be restricted to daytime hours. Speed limit signage will be erected and shall be restricted to 30 km/h or less, where appropriate. • See mitigation measures for spills under 'Wetlands'. 	<ul style="list-style-type: none"> • Minimized or avoided during operation 	<ul style="list-style-type: none"> • Post-construction monitoring for mortality, as detailed in the <i>Environmental Effects Monitoring Plan (NHA/EIS)</i>. • Three-year post-construction monitoring plan on natural features where avoidance behaviour of significant wildlife habitat has been identified as a potential effect of operations. • An <i>Emergency Response and Communications Plan</i> would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Birds and Bats	<ul style="list-style-type: none"> • Mortality from turbine operation. 	<ul style="list-style-type: none"> • Minimize disturbance to birds and bats. 	<ul style="list-style-type: none"> • Post-construction monitoring for mortality, as detailed in the <i>Environmental Effects Monitoring Plan (NHA/EIS)</i>. 	<ul style="list-style-type: none"> • Minimized or avoided during operation. 	<ul style="list-style-type: none"> • Post-construction monitoring for mortality, as detailed in the <i>Environmental Effects Monitoring Plan (NHA/EIS)</i>.

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Other Natural Heritage Features	<ul style="list-style-type: none"> Indirect effects to natural communities from accidental spills and/or improper waste disposal (fluids, containers, cleaning materials). 	<ul style="list-style-type: none"> No spills. Proper waste disposal. 	<ul style="list-style-type: none"> See mitigation measures for spills under 'Wetlands'. See mitigation measures for waste under 'Woodlands'. 	<ul style="list-style-type: none"> Minimized or avoided during operation. 	<ul style="list-style-type: none"> Detailed mitigation measures for the Project are provided in the <i>NHA/EIS</i> and the <i>NHA/EIS Addendum</i>. An Emergency Response and Communications Plan would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Water Bodies and Aquatic Resources					
Groundwater	<ul style="list-style-type: none"> Potential contamination from accidental spills. 	<ul style="list-style-type: none"> No spills. 	<ul style="list-style-type: none"> The water well at the operation and maintenance building will be designed and operated in accordance with municipal, provincial and local health unit requirements as appropriate. See mitigation measures for spills under 'Wetlands'. 	<ul style="list-style-type: none"> Accidental spills would be spatially limited and of short duration. No net effects are anticipated for water well usage. 	<ul style="list-style-type: none"> An Emergency Response and Communications Plan would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Surface Water, Fish, and Fish Habitat	<ul style="list-style-type: none"> Potential contamination from accidental spills. Erosion and sedimentation 	<ul style="list-style-type: none"> No spills. No erosion or sedimentation 	<ul style="list-style-type: none"> See mitigation measures for spills under 'Wetlands'. Vegetation removal on the slopes of watercourses would be minimized to the extent possible, to minimize the risk of slope failure and siltation. Stream banks (i.e. the area between erosion control fences) would not be disturbed until necessary for maintenance activities. Materials removed or stockpiled (e.g. excavated soil, backfill material, etc.) would be deposited and contained in a manner to ensure sediment does not enter a watercourse. As soon as possible following completion of the maintenance activity, stream banks would be restored to their original grade. Even with properly installed erosion and siltation control measures, extreme runoff events could result in collapse of silt fencing, slope or trench failures and other problems which could lead to siltation of waterbodies. If siltation to a watercourse occurs, activities would cease immediately until the situation is rectified. 	<ul style="list-style-type: none"> Spatially and temporarily limited 	<ul style="list-style-type: none"> Silt fencing would be inspected regularly to ensure proper function, particularly during heavy rainfall events. Post-construction monitoring would occur at least once a month in Kerry's Creek. An Emergency Response and Communications Plan would be developed by the Proponent and/or the Operation and Maintenance Contractor and would include protocols for the proper handling of material spills and associated procedures to be undertaken in the event of a spill.
Air Quality and Environmental Noise					
Air Emissions	<ul style="list-style-type: none"> Emissions from operation and maintenance activities, including equipment and vehicles. 	<ul style="list-style-type: none"> Minimize duration and magnitude of emissions. 	<ul style="list-style-type: none"> Operation staff would operate vehicles in a manner that reduces air emissions to the extent practical, including: <ul style="list-style-type: none"> Using multi-passenger vehicles to the extent practical Avoid idling vehicles Equipment and vehicles would be maintained in a manner that reduces air emissions, including: <ul style="list-style-type: none"> Using mufflers and emission control systems as available; Meet the emissions requirements of the MOE and/or MTO; 	<ul style="list-style-type: none"> Short-term in duration and highly localized 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.
Dust & Odour Emissions	<ul style="list-style-type: none"> Dust emissions from operation and maintenance vehicles and unpaved road surfaces exposed to wind. 	<ul style="list-style-type: none"> Minimize duration and magnitude of emissions. Minimize disturbance to existing land uses. 	<ul style="list-style-type: none"> Maintaining equipment in good running condition and in compliance with regulatory requirements. Dust suppression (e.g. water and/or calcium chloride) of source areas as necessary. 	<ul style="list-style-type: none"> Short-term in duration and highly localized 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.

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Noise	<ul style="list-style-type: none"> Noise emitted from a turbine and/or transformer. Noise emitted from traffic and/or vehicles. 	<ul style="list-style-type: none"> Noise at all non-participating to meet MOE Guidelines. 	<ul style="list-style-type: none"> Covering loads of friable materials during transport. Adherence to all noise setback requirements. In the event the Project does not operate according to the terms and conditions of the REA, the Proponent would contact the MOE to determine the best path forward for resolving the issue. All engines associated with maintenance equipment would be equipped with mufflers and/or silencers in accordance with MOE and/or MTO guidelines and regulations. Noise levels arising from maintenance equipment would also be compliant with sound levels established by the MOE. Routine Project maintenance to ensure infrastructure is operating properly and efficiently. To the greatest extent possible, operation activities that could create excessive noise would be restricted to regular business hours, when residents are less sensitive to noise, and adhere to any local noise by-laws as appropriate. If maintenance activities that cause excessive noise must be carried out outside of these time frames, adjacent residents would be notified in advance and by-law conformity would occur, as required. 	<ul style="list-style-type: none"> Application of the recommended mitigation measures during operations would limit noise emissions to the general vicinity of the turbine locations and substation property Intermittent noise would increase during regular business hours at the turbine locations and substation property Any adverse net effects due to noise during operation of the Project are anticipated to be short-term in duration and intermittent 	<ul style="list-style-type: none"> Routine facility maintenance to ensure infrastructure is operating properly and efficiently would be performed as required Adherence to Complaint Response Protocol.
Land-use and Socio-Economic Resources					
Existing Land Uses	<ul style="list-style-type: none"> Lands which are occupied by facility components would be removed from their present land-use. Temporary increase in noise and dust levels. Potential for minor increase in traffic during maintenance activities. 	<ul style="list-style-type: none"> Minimize disturbance to existing land uses, including local businesses. 	<ul style="list-style-type: none"> Operational and maintenance activities would be restricted to areas where Project components are located. Siting of turbines will comply with MOE guidelines. See 'Environmental Noise', 'Dust and Odour Emissions', and 'Local Traffic'. 	<ul style="list-style-type: none"> Some disturbance to adjacent land uses from noise and dust is unavoidable Short-term in duration, temporary, and highly localized Minimized through the implementation of good site practices, transportation planning, and communication with the community 	<ul style="list-style-type: none"> See 'Noise'. See 'Dust and Odour Emissions'. See 'Local Traffic' Adherence to Complaint Response Protocol.
Recreation Areas and Cultural Features	<ul style="list-style-type: none"> Temporary increase in noise and dust levels. Potential for minor increase in traffic during maintenance activities. 	<ul style="list-style-type: none"> Minimize disturbance to recreational areas and features 	<ul style="list-style-type: none"> See 'Environmental Noise', 'Dust and Odour Emissions', and 'Local Traffic' 	<ul style="list-style-type: none"> Short-term and intermittent 	<ul style="list-style-type: none"> See 'Noise', 'Dust and Odour Emissions', and 'Local Traffic' Adherence to Complaint Response Protocol.
Agricultural Lands and Operations	<ul style="list-style-type: none"> Change in use from agricultural land use to industrial use Inconvenience to operations from traffic and dust. Minimal impacts to livestock are anticipated. 	<ul style="list-style-type: none"> Minimize disturbance to agricultural lands and operations. 	<ul style="list-style-type: none"> Landowners are being financially compensated for the lease of the private lands Siting of turbines and access roads is completed with the approval of the participating landowner. Communication with property/livestock owners. See 'Dust and Odour Emissions', and 'Local Traffic' 	<ul style="list-style-type: none"> Spatially limited for the life of the Project 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.
Mineral, Aggregate and Petroleum Resources	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A
Game and Fishery Resources	<ul style="list-style-type: none"> Sensory disturbance to game species from noise. Possible barriers to fish 	<ul style="list-style-type: none"> Minimize disturbance to game and fishery resources. 	<ul style="list-style-type: none"> Siting the Project outside of wetlands and naturally vegetated areas has largely precluded disturbance to local flora, small mammals and amphibians, natural habitat, and corridor functions 	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> None required.

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	passage from improperly installed culverts.		<ul style="list-style-type: none"> Culverts would be designed and installed such that there is no restriction of flows through the culvert 		
Local Traffic	<ul style="list-style-type: none"> Short-term, localized disturbance to traffic patterns, increases in traffic volume, and/or creation of potential traffic safety hazards. 	<ul style="list-style-type: none"> Minimize disturbance to local traffic. 	<ul style="list-style-type: none"> As appropriate, permits would be obtained to implement activities requiring special traffic planning. As appropriate, non-conventional loads would have front and rear escort or "pilot" vehicles accompany the truck movement on public roads as appropriate. Proponent will provide notification of non-conventional load movements that may significantly interfere with local traffic. 	<ul style="list-style-type: none"> Potential for accidents along the haul routes and on-site cannot be totally disqualified. Limited and insignificant effect on traffic. 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.
Viewscape	<ul style="list-style-type: none"> Disruption to viewscape from siting of project infrastructure. 	<ul style="list-style-type: none"> Minimize potential for visual disturbance. 	<ul style="list-style-type: none"> The operation and maintenance building construction and finishes would be chosen to be compatible with the rural setting of the General Project Area and other buildings in the locale. The substation and transformer station may be surrounded by berms to mitigate the visual impact of the site. Limited opportunities for potential mitigation strategies given the height of the wind turbines and met towers, and the landscape patterns. 	<ul style="list-style-type: none"> The changed visual landscape would be present during the life of the facility. 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.
Local Economy	<ul style="list-style-type: none"> Increase in direct, indirect and induced employment over the operations period. Local economic benefits from land lease payments, municipal taxes, etc. 	<ul style="list-style-type: none"> Create positive effects on local economy 	<ul style="list-style-type: none"> To the extent practicable required goods and services would be sourced from qualified local suppliers where these items are available in sufficient quantity and quality and at competitive prices. 	<ul style="list-style-type: none"> Positive income, employment, and fiscal benefits to the local area, including Huron County and the Township of ACW, and participating landowners. Huron County would receive ongoing property tax income from the Project. Participating landowners would receive land payments based on agreements with the Proponent and owners of residences within a specified distance of a Project wind turbine would receive Community Renewable Energy Benefit payments. Existing businesses within the local communities could benefit from the demands of the Project workforce during operations. 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol.
Existing Infrastructure					
Provincial, Municipal, and Other Major Infrastructure	<ul style="list-style-type: none"> May be instances during maintenance activities where excess loads would require special traffic planning. See 'Local Traffic'. 	<ul style="list-style-type: none"> Minimize disturbance to provincial, municipal, and other major infrastructure. 	<ul style="list-style-type: none"> Necessary permits would be obtained. Consultation with the appropriate local municipality regarding excess loads required during operation that have potential to damage municipal roads. 	<ul style="list-style-type: none"> Potential for damage due to excess loads required for maintenance activities cannot be totally disqualified. Limited, short-term effect on infrastructure. 	<ul style="list-style-type: none"> See 'Local Traffic' Adherence to Complaint Response Protocol.
Telecommunication and Radar Systems	<ul style="list-style-type: none"> Potential to interfere with telecommunication and radar systems. 	<ul style="list-style-type: none"> Minimize interference with radio, TV, or internet signals. Minimize interference with cellular telephone networks. 	<ul style="list-style-type: none"> The Proponent has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems. In the unlikely event that signal disruption is experienced, mitigation measures may include: <ul style="list-style-type: none"> Replacing the receiving antenna with one that has a better discrimination to the unwanted signals, Relocating either the transmitter or receiver, or Switching to an alternate means of receiving the information. 	<ul style="list-style-type: none"> Limited and of short-term duration. 	<ul style="list-style-type: none"> The Proponent would review potential incidents of telecommunications interference on a case by case basis. Adherence to Complaint Response Protocol.
Aeronautical Systems	<ul style="list-style-type: none"> Aeronautical obstruction. 	<ul style="list-style-type: none"> Minimize potential hazard to low flying aircraft. 	<ul style="list-style-type: none"> Turbine lighting must conform to Transport Canada standards. In order to reduce rural light pollution, 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Adherence to marking and lighting requirements of the Aerodrome Safety Branch of Transport Canada.

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			lights would be selected with the minimal allowable flash duration, narrow beam, and would be synchronized. <ul style="list-style-type: none"> NAV Canada would be responsible for updating all aeronautical charts with the turbine locations promptly after Project approval. 		
Contaminated Lands					
Contaminated Lands	• None anticipated.	• No impacts to/from landfills.	• None.	• None.	• N/A
Public Health and Safety					
Turbine Blade and Structural Failure	• Public Health and Safety.	• No structural failure of the turbines or ancillary equipment.	<ul style="list-style-type: none"> Design, install, operate, and maintain turbines according to current applicable industry standards/certifications. Training and education of staff operating the control system. 	• None	<ul style="list-style-type: none"> Inspection s of turbines would occur after extreme weather events. Turbine maintenance to ensure turbines are running properly and efficiently.
Ice fall and shed	• Public Health and Safety.	• Limit potential for ice throw/shed to impact pedestrians.	<ul style="list-style-type: none"> Adherence to required setbacks. Design of turbine tower reduces ice accumulation. Automatic turbine shutdown due to weight imbalances. 	• None.	• Inspection s of turbines would occur after extreme weather events.
Extreme Weather Events	• Potential damage to project infrastructure from extreme weather events.	• No structural failure of the turbines or Project equipment.	<ul style="list-style-type: none"> Project components have been designed to withstand the effects from extreme events. Design, install, operate, and maintain turbines according to applicable industry standards/certifications. Turbines are designed to automatically shut down in the event of excessive wind conditions, imbalance, or malfunction of other turbine components. Adherence to setbacks from receptors. 	• None.	• Turbine maintenance to ensure turbines are running properly and efficiently.