

Appendix B

Overview of Potential Environmental Effects and Monitoring Plans

**BROOKE-ALVINSTON WIND FARM
PROJECT DESCRIPTION REPORT**

Appendix B – Overview of Potential Environmental Effects and Monitoring Plans
February 2011

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
<i>Heritage and Archaeological Resources</i>			
Protected Properties and Heritage Resources	<ul style="list-style-type: none"> None anticipated. 	<ul style="list-style-type: none"> N/A 	N/A
Archaeological Resources	<ul style="list-style-type: none"> Damage of previously unknown materials during excavation. 	<ul style="list-style-type: none"> Construction Contractor would be notified of the stop work protocol should artefacts and/or human remains be encountered during excavation as described in the Construction Plan Report. 	None.
<i>Natural Heritage Resources</i>			
Wetlands	<ul style="list-style-type: none"> Indirect effects on a swamp vegetation community from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Project Location would be staked and monitored. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Anticipated to be short-term in duration and intermittent.
Areas of Natural and Scientific Interest	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Valleylands and Hazard Lands	<ul style="list-style-type: none"> Hazard lands within 120m of the Project Location have been confirmed by the St. Clair Region Conservation Authority. 	<ul style="list-style-type: none"> Zephyr Farms would be required to obtain a permit from the St. Clair Region Conservation Authority before construction and decommissioning could begin. 	None.
Woodlands	<ul style="list-style-type: none"> Indirect effects on adjacent woodlots from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Project Location would be staked and monitored. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Anticipated to be short-term in duration and intermittent.
Provincial Parks and Conservation Reserves	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Other Designated Natural Areas	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Significant Wildlife Species	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Significant Wildlife Habitat	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Other Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> Indirect effects on wildlife in nearby woodlots from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Project Location would be staked and monitored. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Anticipated to be short-term in duration and intermittent.
Significant Flora Species and Vegetation Communities	<ul style="list-style-type: none"> Indirect effects on a rare vegetation community from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Project Location would be staked and monitored. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Anticipated to be short-term in duration and intermittent.
Other Flora and Vegetation Communities	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Water Bodies and Aquatic Resources			
Groundwater	<ul style="list-style-type: none"> Some dewatering activity possible during excavations; not expected to exceed 50,000 litres (L) per day. Potential for contamination through accidental spills. 	<ul style="list-style-type: none"> If groundwater is encountered during excavations, good practices would be used, including the following key measures: <ul style="list-style-type: none"> – minimizing the length of time that the excavation is open; – monitoring seepage into the excavation; – energy dissipation techniques would be used for any pumped water to reduce the potential for erosion and sourcing; – piping would be free of leaks, anchored, and monitored; and – If energy dissipation measures are found to be inadequate, the rate of dewatering would be reduced or ceased until satisfactory mitigation 	Any potential effects would be short term in nature and have little to no effect on groundwater flow conditions or adjacent private water wells.

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
		<p>measures are in place.</p> <ul style="list-style-type: none"> All spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE's Spills Action Centre. A Construction Emergency Response and Communications Plan would be developed by the Construction Contractor and/or Zephyr Farms 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"> Sedimentation and accidental spills. 	<ul style="list-style-type: none"> Erosion and sediment control measures would be implemented during all construction activities. The contractor would obtain adequate quantities of materials in order to control erosion and sediment deposition. Measures would be inspected regularly. Materials removed or stockpiled would be deposited and contained in a manner to ensure sediment does not enter a watercourse. Measures would remain securely installed until permanent vegetation measures are successful and areas are stabilized, as determined by the Contractor. If sedimentation occurs, the Emergency Response Plan would be followed. 	Any potential net effects to fish and fish habitat would be infrequent, of low probability, of short duration and of limited spatial extent.
Air Quality and Environmental Noise			
Air Emissions	<ul style="list-style-type: none"> The engine exhaust from vehicles represents a source of particulate and other emissions. Traffic delays result in increased emissions from vehicles traveling slowly through construction zones. The delivery of materials can generate emissions, especially for sites that are relatively far from material manufacturers. 	<ul style="list-style-type: none"> Multi-passenger vehicles would be utilized to the extent practical; Company and contractor personnel would avoid idling of vehicles when not necessary for construction activities; Equipment and vehicles would be turned off when not in use unless required for activities and/or effective operation of the equipment or vehicle; Equipment and vehicles would be maintained in good working order with functioning mufflers and emission control systems as available; All vehicles would be fitted with catalytic converters as required; All construction equipment and vehicles would meet the emissions requirements of the MOE and/or MTO; As appropriate, records of vehicle maintenance would be retained and made available for periodic review by the Contractor; and All vehicles identified through the monitoring program that fail to meet the 	Any adverse net effects are anticipated to be short-term in duration and highly localized.

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Dust and Odour Emissions	<ul style="list-style-type: none"> Winds may erode and disperse loose soil material, storage piles and road surfaces, which may be a nuisance to residential properties and have various impacts on the natural environment. No odour emissions are anticipated from the Project. 	<p>minimum emission standards would be repaired immediately or replaced as soon as practicable.</p> <ul style="list-style-type: none"> The Contractor would implement good site practices which may include: <ul style="list-style-type: none"> Maintaining equipment in good running condition and in compliance with regulatory requirements; Protecting stockpiles of friable material with a barrier or windscreen and in the event of dry conditions and excessive dust; Dust suppression (e.g. water and/or calcium chloride) of source areas; and; Covering loads of friable materials during transport. 	Any adverse net effects to air quality from dust emissions are anticipated to be short-term in duration and highly localized.
Environmental Noise	<ul style="list-style-type: none"> Noise would be generated by the operation of heavy equipment at each of the work areas and associated vehicular traffic on-site and on haul routes. 	<ul style="list-style-type: none"> All engines associated with construction and decommissioning equipment would be equipped with mufflers and/or silencers in accordance with MOE and/or MTO guidelines and regulations. To the greatest extent possible, activities that could create excessive noise would be restricted to regular construction hours and adhere to any local noise by-laws. If 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. Sources of continuous noise, such as portable generator sets, would be shielded as appropriate or located so as to minimize disturbance to local residents. 	Intermittent noise would increase during regular construction hours at the work areas and/or along the haul route. Any adverse net effects due to noise are anticipated to be short-term in duration and intermittent.
Land Use and Socio-Economic Resources			
Areas Protected Under Provincial Plans & Policies	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Existing Land Uses	<ul style="list-style-type: none"> Agricultural lands would be changed from present land use for the duration of the Project. There would be a temporary increase in noise and dust levels around the work and 	<ul style="list-style-type: none"> The landowner is being compensated by Zephyr Farms for agricultural land that will be taken out of production during the lifespan of the Project. Mitigation measures related to environmental noise due to construction/decommissioning activities are outlined in '<i>Environmental Noise</i>'. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. 	Disturbance will be short-term in duration, temporary, and will be minimized through the implementation of site practices, transportation planning, and

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Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
	haul areas resulting in potential effects to adjacent land uses.		communication with the community.
Recreation Areas	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • N/A 	N/A
Agricultural Lands and Operations	<ul style="list-style-type: none"> • Potential impacts to soil. • Adverse effects could occur to artificial drainage • Potential for transportation of soybean cyst nematode (SCN) contaminated soil to non-infested fields. 	<ul style="list-style-type: none"> • Detailed mitigation measures for impacts to agricultural lands and operations are provided in the <u>Construction Plan Report</u>. Key measures include: <ul style="list-style-type: none"> – Implementing a wet soil shutdown practice; – Monitoring of topsoil stripping in areas to be restored after the construction/decommissioning activity; – Decompaction to occur as required; – Topsoil replacement; – Mitigation measures related to sediment and erosion control are outlined in ‘Surface Water, Fish and Fish Habitat’; – Artificial tile drainage would be repaired and monitored; and – A soil sampling program would be implemented to identify potential SCN infestation. 	Disturbances to agricultural lands are expected to be temporary and spatially limited.
Mineral, Aggregate, and Petroleum Resources	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • N/A 	N/A
Forest Resources	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • N/A 	N/A
Game And Fishery Resources	<ul style="list-style-type: none"> • Construction and maintenance noise may disturb hunting and fishing. 	<ul style="list-style-type: none"> • Mitigation measures related to environmental noise due to construction/decommissioning activities are outlined in ‘<i>Environmental Noise</i>’. 	Anticipated to be short-term in duration and intermittent.
Local Traffic	<ul style="list-style-type: none"> • The increase in traffic, including excess load traffic, may result in disturbance to traffic patterns, increase in traffic volume, and create potential traffic safety hazards. In addition, the transportation of excess loads and large turbine components may produce abnormal wear on the 	<ul style="list-style-type: none"> • The Contractor would implement a Traffic Management Plan. • Agreements regarding maintenance and/or repairs of any local roads damaged would be developed with the municipalities. 	Net effects of increased traffic are anticipated to be limited, short-term effects.

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
	municipal roads.		
Local Economy	<ul style="list-style-type: none"> Would result in direct, indirect and induced benefits in terms of business income and employment. 	<ul style="list-style-type: none"> Zephyr Farms would make all reasonable efforts, to the extent possible, to source required services and materials from local suppliers where these items are available in sufficient quantity and quality and at competitive prices. 	Positive.
Existing Infrastructure			
Provincial and Other Major Infrastructure	<ul style="list-style-type: none"> The Project will connect into HONI's electricity distribution system. 	<ul style="list-style-type: none"> Zephyr Farms would obtain all necessary permits and authorizations for connection into the provincial electricity grid. 	None.
Navigable Waters	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Municipal Infrastructure	<ul style="list-style-type: none"> See '<i>Local Traffic</i>'. 	<ul style="list-style-type: none"> Mitigation measures related to the municipal roads is outlined in '<i>Local Traffic</i>'. 	See ' <i>Local Traffic</i> '.
Waste Management and Contaminated Lands			
Landfill Sites	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Contaminated Lands	<ul style="list-style-type: none"> There is a limited possibility for finding contaminated sites. 	<ul style="list-style-type: none"> In the event that previously unknown contaminated soils, such as buried tanks, drums, oil residue or gaseous odour, are uncovered or suspected of being uncovered, activities would cease in that location until the source of the contamination is further investigated. In such an instance, Zephyr Farms would seek expert advice on assessing and developing a soil sampling, handling and remediation plan. All contaminated material would be managed in accordance with the applicable sections of the <i>Environmental Protection Act</i> and Regulation 347. 	None.
Waste Generation	<ul style="list-style-type: none"> Improper disposal of waste material generated may result in contamination to soil, groundwater, and/or surface water resources on and off the Project sites. Litter generated may also become a nuisance to nearby residences if not appropriately contained and 	<ul style="list-style-type: none"> The Contractor would implement a site-specific waste collection and disposal management plan, which may include site practices such as: <ul style="list-style-type: none"> systematic collection and separation of waste materials; 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; contractors would be required to remove their excess materials from the site; excess materials generated during the course of construction excavations of soil would be handled in accordance with the MOE's 	Minor incremental effect on soil, groundwater, and surface water at the waste disposal site(s) depending on municipal on-site containment practices and quality of the landfill protection

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Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
	<p>allowed to blow off the construction-site.</p>	<p>Protocol for the Management of Excess Materials in Road Construction and Maintenance;</p> <ul style="list-style-type: none"> – excess excavated soils may be reused elsewhere on the property with landowner permission; – labelling and proper storage of hazardous and liquid wastes (e.g. used oil, drained hydraulic fluid, and used solvents) in a secure area that would ensure containment of the material in the event of a spill; – dumping or burying wastes within the Project sites would be prohibited; – should contaminated soil be encountered during the course of excavations the contaminated material would be disposed of in accordance with the current appropriate provincial legislation, such as Ontario Regulation 347, the General – Waste Management Regulation; – 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; – implementation of an on-going waste management program consisting of reduction, reuse, and recycling of materials; and – disposal of sanitary wastes would be the responsibility of the contracted third party and they would ensure disposal in accordance with appropriate legislation, standards and policies. <ul style="list-style-type: none"> • During construction, the cement provider would be responsible for ensuring that wash water from the cleaning of cement truck drums is disposed of in a sewage works designed for that purpose and approved under Section 53.(1) of the <i>Ontario Water Resources Act</i>, or under Part 8 of the <i>Building Code Act</i>. 	<p>mechanisms.</p>
<p>Accidental Spills</p>	<ul style="list-style-type: none"> • Accidental spills are possible. 	<ul style="list-style-type: none"> • Standard containment facilities and emergency response materials would be maintained on-site as required. • Refuelling, equipment maintenance, and other potentially contaminating activities would occur in designated areas. • As appropriate spills would be reported immediately to the MOE Spills Action Centre. 	<p>None.</p>

Appendix B-1: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Construction and Decommissioning of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Public Health and Safety			
Public Health and Safety	<ul style="list-style-type: none"> Increased traffic, dust emissions, construction noise, unauthorized access to the work sites 	<ul style="list-style-type: none"> Mitigation measures related to the increased traffic is outlined in '<i>Local Traffic</i>'. Mitigation measures related to dust emissions is provided in '<i>Dust and Odour Emissions</i>'. Mitigation measures related to noise from construction and decommissioning activities is provided in '<i>Environmental Noise</i>'. Land access would be controlled through signage and restricted to authorized personnel only. The Health and Safety Plan would consider both public and occupational health and safety issues. 	There is minimal increased or new risk to public health and safety from construction and/or decommissioning of the Project.

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
<i>Heritage and Archaeological Resources</i>			
Protected Properties and Heritage Resources	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Archaeological Resources	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
<i>Natural Heritage Resources</i>			
Wetlands	<ul style="list-style-type: none"> Indirect effects on a swamp vegetation community from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Anticipated to be short-term in duration and intermittent.
Areas of Natural and Scientific Interest	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Valleylands and Hazard Lands	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Woodlands	<ul style="list-style-type: none"> Indirect effects on adjacent woodlots from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> Project Location would be staked and monitored. Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	Any adverse net effects would be short-term in duration and intermittent
Provincial Parks and Conservation Reserves	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Other Designated Natural Areas	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Significant Wildlife Species	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Significant Wildlife Habitat	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Other Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> • Direct mortality, and indirect disturbance, to birds • Direct mortality, and indirect disturbance, to bats • Indirect effects to amphibians 	<ul style="list-style-type: none"> • Spills response procedures, as appropriate • Maintain and review records of waste disposal • Utilize turbine lighting with the shortest possible flash durations and the longest possible pause between flashes • Mitigation measures for amphibians are outlined in '<i>Game and Fishery Resources</i>'. 	<p>May be limited disturbance and mortality to birds and bats</p> <p>Any indirect adverse net effects would be short-term in duration and intermittent.</p>
Significant Flora Species and Vegetation Communities	<ul style="list-style-type: none"> • Indirect effects on a rare vegetation community from dust, erosion and sedimentation, accidental spills and waste. 	<ul style="list-style-type: none"> • Mitigation measures related to dust are outlined in '<i>Dust and Odour Emissions</i>'. • Mitigation measures for erosion and sediment control are outlined in '<i>Surface Water, Fish and Fish Habitat</i>'. • Mitigation measures for accidental spills and waste are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	<p>Anticipated to be short-term in duration and intermittent.</p>
Other Flora Species and Vegetation Communities	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • N/A 	<p>N/A</p>
Water Bodies and Aquatic Resources			
Groundwater	<ul style="list-style-type: none"> • Potential contamination from accidental spills. 	<ul style="list-style-type: none"> • Mitigation measures for accidental spills are outlined in '<i>Waste Management and Contaminated Lands</i>'. 	<p>Accidental spills would be spatially limited and of short duration and protocols to minimize their impact would be provided in the Emergency Response Plan.</p>

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Surface Water, Fish and Fish Habitat	<ul style="list-style-type: none"> • Potential contamination from accidental spills to indirect fish habitat. • Potential sedimentation during maintenance activities to indirect fish habitat. 	<ul style="list-style-type: none"> • Erosion and sediment control measures would be implemented during all maintenance activities. • The contractor would obtain adequate quantities of materials in order to control erosion and sediment deposition. • Measures would be inspected regularly. • Materials removed or stockpiled would be deposited and contained in a manner to ensure sediment does not enter a watercourse. • Measures would remain securely installed until permanent vegetation measures are successful and areas are stabilized, as determined by the Contractor. • If sedimentation occurs, the Emergency Response Plan would be followed. 	Any potential net effects to fish and fish habitat would be infrequent, of low probability, of short duration and of limited spatial extent.
<i>Air Quality and Environmental Noise</i>			
Air Emissions	<ul style="list-style-type: none"> • Emissions from equipment and vehicles 	<ul style="list-style-type: none"> • Operations 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 as possible; and – 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; – Using catalytic converters as required; – Meet the emissions requirements of the MOE and/or MTO; – As appropriate, records of vehicle maintenance would be retained and made available for periodic review by the Operation and Maintenance Contractor; and – All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon as practicable. 	Increased emissions would be short-term in duration and highly localized.

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Dust & Odour Emissions	<ul style="list-style-type: none"> Dust emissions from operations and maintenance vehicles. 	<ul style="list-style-type: none"> The Contractor would implement good site practices which may include: <ul style="list-style-type: none"> Maintaining equipment in good running condition and in compliance with regulatory requirements; Protecting stockpiles of friable material with a barrier or windscreen and in the event of dry conditions and excessive dust; Dust suppression (e.g. water and/or calcium chloride) of source areas; and; Covering loads of friable materials during transport. 	Increased dust would be short-term in duration and highly localized.
Environmental 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"> 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 facility maintenance to ensure infrastructure is operating properly and efficiently; and To the greatest extent possible, operations 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. 	Noise anticipated to be short-term in duration and intermittent.
Land Use and Resources			
Areas Protected Under Provincial Plans and Policies	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Existing Land Uses	<ul style="list-style-type: none"> Removal of land from agricultural production. Temporary increase in noise and dust levels during maintenance. 	<ul style="list-style-type: none"> Mitigation measures related to noise are outlined in 'Environmental Noise'. Mitigation measures related to dust emissions are outlined in 'Dust and Odour Emissions'. 	Disturbance anticipated to be short-term in duration, temporary, highly localized, and minimized through good site practices, transportation planning and communication with the community.
Recreation Areas	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Agricultural Lands and Operations	<ul style="list-style-type: none"> Inconvenience from crane pad construction. 	<ul style="list-style-type: none"> Siting of crane pads to minimize land disturbance, and post-rehabilitation. 	Effects to be temporary and spatially limited.
Mineral, Aggregate, and Petroleum Resources	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Forest Resources	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Game And Fishery Resources	<ul style="list-style-type: none"> Disturbance to game species from noise. 	<ul style="list-style-type: none"> Turbines would be placed in agricultural lands away from woodlands, and within the REA setback requirements. 	None.
Local Traffic	<ul style="list-style-type: none"> Negligible increase in traffic. 	<ul style="list-style-type: none"> Obtain permits for excess loads and road improvements. As appropriate, utilize escort vehicles for non-conventional loads. Potential for public notification of non-conventional load movements. 	Any adverse effects would be short-term and intermittent.
Local Economy	<ul style="list-style-type: none"> Increase in direct, indirect and induced business income and employment. 	<ul style="list-style-type: none"> Zephyr Farms would make all reasonable efforts, to the extent possible, to source required services and materials from local suppliers where these items are available in sufficient quantity and quality and at competitive prices. 	Positive.
Viewscape	<ul style="list-style-type: none"> Disruption to viewscape from siting of project infrastructure. Shadow flicker. 	<ul style="list-style-type: none"> Landscaping at the substation property. 	The changed visual landscape would be present during the life of the Project.
Existing Infrastructure			
Provincial and other major infrastructure	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Navigable Waters	<ul style="list-style-type: none"> None. 	<ul style="list-style-type: none"> N/A 	N/A
Municipal Infrastructure	<ul style="list-style-type: none"> See 'Local Traffic'. 	<ul style="list-style-type: none"> See 'Local Traffic'. 	See 'Local Traffic'.

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Telecommunication and Radar Systems	<ul style="list-style-type: none"> Potential to interfere with telecommunication and radar systems. 	<ul style="list-style-type: none"> Zephyr Farms has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems. Turbine siting took into account setbacks required from 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. 	Any adverse effects would be limited and of short-term duration.
Aeronautical Systems	<ul style="list-style-type: none"> Aeronautical obstruction. 	<ul style="list-style-type: none"> Turbine lighting must conform to Transport Canada standards. Lights would be selected with the minimal allowable flash duration, narrow beam, and would be synchronized. Nav Canada would be responsible for updating all aeronautical charts with the turbine locations. 	None.

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
<i>Waste Management and Contaminated Lands</i>			
Waste Generation	<ul style="list-style-type: none"> Improper disposal of waste material may result in contamination to soil, groundwater, and/or surface water resources on and off the Project Location. Litter may become a nuisance to nearby residences if not appropriately contained and allowed to blow off site. 	<ul style="list-style-type: none"> Systematic collection and separation of waste materials within on-site storage areas in weather-protected areas; Contractors would be required to remove all waste materials from the turbine locations during maintenance activities; 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; Labelling and proper storage of liquid wastes (e.g. used oil, drained hydraulic fluid, and used solvents) in a secure area that would ensure containment of the material in the event of a spill. As per S.13 of the EPA, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of the prescribed regulatory levels would be reported to the MOE’s Spills Action Centre; As appropriate, spill kits (e.g. containing absorbent cloths and disposal containers) would be provided on-site during maintenance activities; 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; and Implementation of an on-going waste management program consisting of reduction, reuse, and recycling of materials. 	Minor incremental effect on soil, groundwater, and surface water at the waste disposal site(s) depending on municipal on-site containment practices.
Spills	<ul style="list-style-type: none"> Potential contamination from accidental spills. 	<ul style="list-style-type: none"> Standard materials would be maintained on-site as required. Refueling, equipment maintenance, and other potentially contaminating activities would occur in designated areas. Spills should be reported as appropriate to the MOE Spills Action Centre, and the Emergency Response Plan followed. 	None.

Appendix B-2: Summary of Potential Environmental Effects, Mitigation Measures and Net Effects for Operation and Maintenance of the Project

Environmental Feature	Potential Environmental Effects	Mitigation Measures	Net Effects
Public Health and Safety			
Turbine Blade and Structural Failure	<ul style="list-style-type: none"> • Collapse of turbine tower, blade detachment, and/or met tower collapse. 	<ul style="list-style-type: none"> • Adherence to setbacks from receptors. • Design, install, operate, and maintain turbines and met tower according to applicable industry standards/certifications. • Use of lightning protection systems. • Insurance will exist for the facility. 	None.
Ice Fall and Shed	<ul style="list-style-type: none"> • Accumulation of ice on turbine blades and/or met tower. 	<ul style="list-style-type: none"> • Adherence to setback from receptors. • Design of turbine tower reduces ice accumulation. • Automatic turbine shutdown due to weight imbalances. • Signage in areas where potential icing exists. • Insurance will exist for the facility. 	None.
Extreme Weather Events			
Extreme Weather Events	<ul style="list-style-type: none"> • Potential damage to Project infrastructure from extreme weather events. 	<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. • Failsafe devices are capable of shutting down the turbine blades in the event of excessive wind conditions, imbalance, or malfunction of other turbine components. 	None.

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
Heritage and Archaeological Resources			
Protected Properties and Heritage Resources	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Archaeological Resources	<ul style="list-style-type: none"> Monitoring would be required following the unlikely event of the discovery of previously unknown archaeological resources, in consultation with the Ministry of Tourism and Culture. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Natural Heritage Resources			
Wetlands	<ul style="list-style-type: none"> Regular monitoring of the Project Location would be employed to ensure the objective of no disturbance outside of the boundary. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Follow-up monitoring for one year after site restoration would be conducted, to allow for the Project area to experience seasonal changes and help determine if additional restoration is required, as determined by an environmental advisor. A monitoring plan would be prepared prior to decommissioning.
Areas of Natural and Scientific Interest		<ul style="list-style-type: none"> Regular monitoring of the Project Location would be employed to ensure the objective of no disturbance outside of the boundary. 	
Valleylands and Hazard Lands			
Woodlands		<ul style="list-style-type: none"> N/A 	
Provincial Parks and Conservation Reserves			
Other Designated Natural Areas			
Significant Wildlife Species			
Significant Wildlife Habitat		<ul style="list-style-type: none"> Twice-weekly mortality monitoring at all turbines during May 1- September 30, for a period of three years. Searcher efficiency and scavenger trials would be conducted each year according to current guidance documents. Regular reporting that includes analysis and submission of results to MNR and EC. 	
Other Wildlife and Wildlife Habitat			
Significant Flora and		<ul style="list-style-type: none"> N/A 	

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
Vegetation Communities			
Other Flora and Vegetation Communities			
<i>Water Bodies and Aquatic Resources</i>			
Groundwater	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A
Surface Water, Fish and Fish Habitat	<ul style="list-style-type: none"> • Erosion and sediment control barriers would be inspected regularly to ensure proper functioning and maintenance. • The Contractor would ensure that bank, bed, and floodplain conditions are restored to pre-construction conditions, as possible, following completion of the construction activities. • Environmental inspection following spring run-off the year after construction (first year of operations) may also be considered to review the effectiveness of erosion and sediment control fencing. In the event that adverse effects are noted, appropriate remedial measures would be completed as necessary and additional follow-up monitoring conducted as appropriate, under the direction of an environmental advisor. 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A
<i>Air Quality and Environmental Noise</i>			
Air Emissions	<ul style="list-style-type: none"> • As appropriate, records of vehicle maintenance would be retained and made available for periodic review by the Construction Contractor. All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or 	<ul style="list-style-type: none"> • As appropriate, records of vehicle maintenance would be retained and made available for periodic review by the Operations and Maintenance Contractor. All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon 	<ul style="list-style-type: none"> • As appropriate, records of vehicle maintenance would be retained and made available for periodic review by the Contractor. All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
	replaced as soon as practicable from the construction area.	as practicable.	as soon as practicable from the decommissioning area.
Dust and Odour Emissions	<ul style="list-style-type: none"> The Contractor would monitor to ensure that temporary topsoil storage piles are stabilized with appropriate means. 	<ul style="list-style-type: none"> Adherence to Complaint Response Protocol. 	<ul style="list-style-type: none"> The Contractor would monitor to ensure that temporary topsoil storage piles are stabilized with appropriate means.
Environmental Noise	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Noise monitoring (if required), would be conducted in accordance with the REA for the Project. Turbine shutdown in the event of a malfunctioning turbine or extreme weather event. Turbine maintenance to ensure turbines are running properly and efficiently Adherence to Complaint Response Protocol. 	<ul style="list-style-type: none"> N/A
Land Use and Socio-Economic Resources			
Areas Protected Under Provincial Plans & Policies	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Existing Land Uses	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Recreation Areas	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
Agricultural Lands and Operations	<ul style="list-style-type: none"> For a period of one year after restoration of temporary work areas on agricultural lands, potential soil problem areas including subsidence, soil erosion and/or stoniness would be visually monitored by a soil specialist (such as a professional agrologist), or as per agreements with the landowner. If adverse impacts are noted during monitoring, appropriate remediation measures would be developed by the soil specialist, or as per agreements with the landowner. Additional follow-up monitoring would be conducted, under supervision of the soils specialist, until adverse impacts are no longer evident. 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> For agricultural land, potential soil problem areas including trench subsidence, soil erosion and/or stoniness would be noted. Additional monitoring activities may also be conducted, depending upon the site conditions at the time of decommissioning. If negative impacts are noted during monitoring activities, appropriate remediation measures would be implemented as necessary, and additional follow-up monitoring would be conducted, as determined by an environmental advisor.
Mineral, Aggregate, and Petroleum Resources	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Forest Resources	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Game And Fishery Resources	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A
Local Traffic	<ul style="list-style-type: none"> For a period of one year after construction (first year of operations), roads would be monitored following a heavy rain event and following spring runoff, as determined in conjunction with the relevant municipality, to ensure no erosion, bank slumpage, road subsidence or major rutting has occurred as a result of construction activities. As appropriate, affected roadside ditches and drains would be repaired if required and monitored to ensure that they are functioning properly. If adverse impacts are noted during 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> N/A

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
	the above post-construction monitoring, appropriate remediation measures would be developed as determined in conjunction with the relevant municipality. As appropriate, affected road substrate would be repaired and roadside ditches and drains would be revegetated. Additional follow-up monitoring would be conducted, as determined in conjunction with the relevant municipality, until adverse impacts are no longer evident.		
Local Economy	• N/A	• N/A	• N/A
Viewscape	• N/A	• N/A	• N/A
Existing Infrastructure			
Provincial and other major infrastructure	• N/A	• N/A	• N/A
Navigable Waters	• N/A	• N/A	• N/A
Municipal infrastructure	• N/A	• N/A	• For municipal road allowances, a review should occur of the establishment and health of revegetation. Additional monitoring activities may also be conducted, depending upon the site conditions at the time of decommissioning. If negative impacts are noted during monitoring activities, appropriate remediation measures would be implemented as necessary, and additional follow-up monitoring would be conducted, as determined by an environmental advisor.
Telecommunications Networks	• N/A	• Zephyr Farms would review potential incidents of telecommunications interference on a case by case basis.	• N/A

Appendix B-3: Summary of Monitoring Plans for Construction, Operation and Decommissioning of the Project

Environmental Feature	Construction	Operation	Decommissioning
Aeronautical Systems	• N/A	• N/A	• N/A
<i>Waste Management and Contaminated Lands</i>			
Landfill Sites	• N/A	• N/A	• N/A
Contaminated Lands	• N/A	• N/A	• N/A
Waste Generation	<ul style="list-style-type: none"> As appropriate, records of waste generation and hauling would be maintained. Where a third party's activities are identified as non-compliant or insufficient, the Construction Contractor would seek out an alternative recycling or disposal solution. 	• N/A	• N/A
Accidental Spills	<ul style="list-style-type: none"> Monitoring would be required following the unlikely event of contamination from an accidental spill or leak. Contaminated soils would be removed and replaced as appropriate. All such activities would follow procedures outlined in the Emergency Response Plan for the Construction Environmental Management Plan. 	<ul style="list-style-type: none"> Monitoring would be required following the unlikely event of contamination from an accidental spill or leak (method for monitoring may be developed in consultation with the Spills Action Centre of the MOE). Contaminated soils would be removed and replaced as appropriate. 	• N/A
<i>Public Health and Safety</i>			
Public Health and Safety	• N/A	• N/A	• N/A
<i>Extreme Weather Events</i>			
Extreme Weather Events	• N/A	• N/A	• N/A