



## 10. ENVIRONMENTAL EFFECTS MONITORING PLAN

---

The environmental effects monitoring plan (EEMP) prepared for the Dufferin Wind Power Project outlines the mitigation measures to minimize the environmental effects of engaging in this renewable energy project (Table 10). The mitigation measures outlined in Table 10 below are in response to the physical impacts and function effects that have potential to occur during the construction, design and operation, and decommissioning of the facility and are specific to significant or provincially significant natural heritage features outlined in Table 8. These will form part of the overall EEMP for the project in the Design and Operations Report and the Construction Plan Report, as applicable. Table 10 also summarizes the monitoring plan and monitoring frequency during operation of the facility, as well as contingency measures that will be undertaken if performance objectives are not achieved. Table 10 should be read in conjunction with Tables 8 and 9 which outline the features and attributes necessary for persistence of baseline ecological functions, features potentially sensitive to development and good indicator features or species.

Table 10: Summary of the Environmental Effects Monitoring Plan for Significant/Provincially Significant Natural Features in and within 120m of the Dufferin Wind Project where an operational impact has the potential to occur.

Unique Feature ID	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Environmental Effects Monitoring Plan					Contingency Measure
				Methodology	Monitoring Locations	Frequency and Duration of Sample Collection	Technical and Statistical Value of Data	Reporting Requirements	
Bat Maternity Colonies  Habitats are within 120m setback: BMRC 1, 2, 4	Loss of species diversity and abundance through habitat displacement or avoidance	Continued use of the habitat by the species (Northern Long-eared Bat, Big Brown Bat, Little Brown Bat, Silver-haired Bat) that currently inhabit these features.	Wind turbines sited outside of the habitat  No project components are within habitat	Apply same methodology followed during pre-construction monitoring (e.g., visual observation; acoustic surveys [see <i>Evaluation of Significance Report</i> ])  Focus post-construction mortality monitoring on turbines within 120 m of bat habitats	Within evaluated significant habitat feature, at snags/tree cavities monitored during EOS surveys	3 year post-construction Survey: 1. June 2014 2. June 2015 3. June 2016	Determine if there is a displacement or avoidance effect caused by turbines located within 120m of bat maternity colonies	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Winter 2014 2. Winter 2015 3. Winter 2016	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.
Colonial Nesting Bird Breeding Habitat (Tree/Shrubs)  CNH 6*, 7*, 12*	Loss of species diversity and abundance through habitat displacement or avoidance	Continued use of the habitat by the species (to be determined) that currently inhabit these features.	Only 230 KV overhead transmission lines are within the habitat  Line is to be constructed along abandoned rail line which will reduce the encroachment on Colonial Nesting Bird Breeding habitat.	Apply same methodology followed during pre-construction monitoring (i.e., nest searches, species identification)  See Section 8.2.4 for detailed methods	Within evaluated significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring locations.	Pre-construction Survey (baseline): 1. June 2012  1 years of post-construction surveys: 1. June 2014	Determine if there is a loss of species abundance through a displacement or avoidance effect caused by turbines and transmission located in proximity to Colonial Nesting Breeding bird Habitat.	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction survey to be submitted Fall 2014	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.
Waterfowl Nesting Area	Loss of species diversity and	Continued use of the habitat by the species	Wind turbines sited outside of	Apply same methodology	Within or adjacent to evaluated	Pre-construction Survey (baseline):	Determine if there is a loss of species	Annual Reports submitted to MNR.	Upon submission of annual post-construction monitoring reports to

Habitats are within project location: WNH 4*, 11*, 12*, -13*, 14*, 16*, 17*, 18*, 20*, 21*, 22*, -23*, 24*	abundance through habitat displacement or avoidance	(to be determined) that currently inhabits the feature.	the habitat  For most, overhead transmission lines are within the habitat  Line is to be constructed along abandoned rail line or road right of ways which will reduce the encroachment on Waterfowl Nesting habitat.	followed during pre-construction monitoring (Waterfowl Breeding Bird Surveys)  See Section 8.2.4 for detailed methods	significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring locations.	1. June 2012  3 years of post-construction monitoring for the WNH within 120m of turbine(s): 1. June 2014 2. June 2015 3. June 2016  1 year of post construction monitoring for WNH in or within project location for any other components: 1. June 2014	abundance through a displacement or avoidance effect caused by turbines and transmission located in proximity to Waterfowl Nesting Habitat.	Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction survey to be submitted Fall 2014, 2015 and 2016	MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.
Amphibian Breeding Habitat (Woodland)  Habitats are within project location: ABH 27*, 31, 38*, 48*, and 59*  Habitats are within 120m setback ABH 1-3, 5, 9, 12, 16, 17, 18*, and 19	Loss of species diversity and abundance though habitat displacement or avoidance  Direct mortality of individuals along access roads	Continued use of the habitat by species documented during pre-construction surveys. These species may include:  American Toad Gray Tree Frog Green Frog Northern Leopard Frog Spring Peeper Western Chorus Frog Wood Frogs	Access roads sited outside of the habitat	Apply same methodology followed during pre-construction monitoring for call count surveys and egg mass searches  See Section 8.2.4 for detailed methods	Within the evaluated significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring locations.	Pre-construction Survey (baseline): 1. Spring 2012  1yr post-construction survey (for significant habitats within project location): 1. Spring 2014	Determine if there is a loss of diversity and abundance of amphibians through displacement or avoidance effects caused by access roads sited adjacent to amphibian breeding habitats	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction survey to be submitted Fall 2014	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.
Marsh Breeding Bird Habitat  MBB 11*, 13*, 17*, 18*, 20, 28*, 31*, 45*	Loss of species diversity and abundance though habitat displacement or avoidance	Continued use of the habitat by Green Heron for IFB20 and for the remaining habitats, species to be determined.	Wind turbine sited outside of the habitat  For most, overhead transmission lines are within	Apply same methodology followed during pre-construction monitoring (Breeding bird survey focusing on Marsh species).	Within evaluated significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring	Pre-construction Survey (baseline): 1. June 2012  3 years of post-construction monitoring for the MBBH within 120m	Determine if there is a loss of species abundance through a displacement or avoidance effect caused by turbines and transmission located in proximity	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.

			the habitat Line is to be constructed along abandoned rail line or road right of ways which will reduce the encroachment on Waterfowl Nesting habitat.	See Section 8.2.4 for detailed methods	locations.	of turbine(s): 1. June 2014 2. June 2015 3. June 2016  1 year of post construction monitoring for MBB in or within project location for any other components: 1. June 2014	to Marsh Bird Breeding Habitat.	survey to be submitted Fall 2014, 2015 and 2016	
Woodland Area Sensitive Forest Breeding Bird Habitat IFB 3, 9*	Loss of species diversity and abundance though habitat displacement or avoidance	Continued use of habitat by Black-throated Green Warblers, Canada Warbler, Ovenbird, Veerys, and Winter Wren for IFB3. Species to be determined for IFB9	Overhead transmission lines sited outside of the habitat	Apply same methodology followed during pre-construction monitoring (Breeding bird survey focusing on Woodland Area-sensitive species).  See Section 8.2.4 for detailed methods	Within evaluated significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring locations.	Pre-construction Survey (baseline): 1. June 2012  1 years of post-construction surveys: 1. June 2014	Determine if there is a loss of species abundance through a displacement or avoidance effect caused by turbines and transmission located in proximity to Woodland Area Sensitive Breeding Bird Habitat.	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction survey to be submitted Fall 2014	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.
Open Country Breeding Bird Habitat OCBB 11*	Loss of species diversity and abundance though habitat displacement or avoidance	Continued use of habitat by (to be determined)	Overhead transmission lines sited outside of the habitat	Apply same methodology followed during pre-construction monitoring (Breeding bird survey focusing on Open Country Breeding Bird species).  See Section 8.2.4 for detailed methods	Within evaluated significant habitat features, post-construction monitoring locations will be the same as pre-construction monitoring locations.	Pre-construction Survey (baseline): 1. June 2012  1 years of post-construction surveys: 1. June 2014	Determine if there is a loss of species abundance through a displacement or avoidance effect caused by turbines and transmission located in proximity to Open Country Breeding Bird Habitat.	Annual Reports submitted to MNR. Estimated Report Submission Dates: 1. Pre-construction survey to be submitted Fall 2012 2. Post-Construction survey to be submitted Fall 2014	Upon submission of annual post-construction monitoring reports to MNR it will be determined in consultation with MNR whether contingency measures are required and the contingency measures to be undertaken.

\* Require pre-construction surveys